635·05
GC
V·53

THE

GARDENERS' CHRONICLE

A Weekly Illustrated Journal

OF

HORTICULTURE AND ALLIED SUBJECTS.

(ESTABLISHED IN 1841.)

GOVERNMENT BOTANICAL GARDENS
LIBRARY.
Section.....
No.....

53

VOL. LIII.—THIRD SERIES.

JANUARY TO JUNE, 1913.

LONDON:
41, WELLINGTON STREET, COVENT GARDEN, W.C.
1913.

INDEX OF CONTENTS.

JANUARY TO JUNE, 1913.

(FOR SPECIAL HEADINGS SEE UNDER BOOKS; CERTIFICATES; LAW NOTES; NURSERY NOTES; OBITUARY; PLANT PORTRAITS; PLANTS, NEW; SCIENTIFIC COMMITTEE; SOCIETIES; AND ILLUSTRATIONS.)

A

ABBOTSBURY Castle destroyed by fire, 105
Aberdeen, grants to horticulture, 372
Aberdeenshire, forestry demonstration in, 372
Abutilon insigne, 26
Acacia dealbata at Branksome Hall, 45
Aconitum Ackermannii, 53
Actinidia chinensis, 407
Adiantum pedatum, 332
Adnitt, Mr. H. W., honour for, 106; testimonial to, 154
Agave Leopoldii, 11
Agee, Alva (*Crops and Methods for Soil Improvement*), 282
Agricultural Department of South Africa, report of the, 165
Agricultural education, 265, 311
Agricultural Holdings Act, 9
Agriculture, a tropical University for, 423; the Board of, 137; tenth International congress of, 26, 58; research in, 271
Allamanda Hendersonii, 24
Almond, the flowering of the, 73
Alpine garden, the 206; a Swiss, 42, 52
Alpine plants, the distribution of, 208, 230; in a Swiss mountain garden, 272
American Ambassador, the, 222
America, endowment of horticulture in, 237; scarcity of labour in, 408
American Gooseberry mildew, 272
American notes, 84, 117, 408
American nursery, an, 179
Anchusa, the propagation of, 360
Androsace, notes on, 188; A. tibetica, 362
Anemone alpina, 313; A. blanda scythinica, 312; A. pulsatilla rosea "Mrs. Van Der Elst," 57
Angræcum Andersonii, 146
Anoplanthus coccineus, 371
Antarctic continent, plants in the, 123
Antirrhinums in America, 117; notes on, 191
Aphelandras, 131
Aphis on spruce, 287
Apiary, the, 71, 103, 167, 203, 327, 345
Apple Bramley's Seedling, record yield of, 360
Apple-breeding in Canada, 384
Apple canker, 128
Apples; Bitter-pit in, 51; colour in, 51; scab and canker on Cox's Orange Pippin, 51; for South America, 121; inheritance in, 74; McIntosh Red, 26; Present van Engeland, 325; fruit with more than 10 seeds, 90
Apples and Peaches, cold storage of, 236
Aquatias, P. (*The Intensive Culture of Vegetables on the French System*), 179
Arber, Agnes (*Herbals: their Origin and Evolution*), 304
Arsenic in plants, 122
Auld, S. J. M. and D. R. Edwardes-Ker (*Practical Agricultural Chemistry*), 130
Australia, notes from, 408; Onion growing in, 404
Austria, gardening in, 169
Avery Hill, the Winter garden at, 121
Azaleas, Indian, 324
Azara microphylla, 165

B

BACTERIAL disease of fruit blossom and foliage, 287
Bagatelle, trial of Roses at, 68
Baker, H. Clinton (*Illustrations of Conifers*), 417
Balsam Pine, the, 432
Bamboo pots, 26
Bancroft, Mr. C. K., appointment of, 237
Bangors Park, 180
"Barr" Memorial Cup, 254
Barrel, a reversible, 404
Bartlett, A. Cecil (*Gardening*), 417
Basket-making, Willows for, 286
Batata, or Sweet Potato, 332, 343
Bateson, W. (*Mendel's Principles of Heredity*), 131
Bauhinia variegata, 378
Bean Aphis, the, 136
Beechwoods and Yew-woods on the chalk, 172
Bee, the, and the Cinematograph, 73
Bees, the management of, 71, 103, 167, 203, 327, 345
Beet, Sugar, 137
"Beetatoes," 160
Begonia Glory of Cincinnati in America, 117; B. "Julius" as a basket plant, 75; B. manicata, 135; B. Nancy, 293
Belgian gardeners, 293
Belsize Court, Hampstead, Dendrobiums at, 247
Belvoir Castle, spring flowers at, 293
Belvoir Park, Belfast, 147
Benevolent Institution, Gardeners' Royal, 25, 41, 62, 153, 403; (annual meeting), 78
Berry-bearing trees, beautiful display of, 90
Berry, Mr. G. P., 370; appointment of, 237
Birch, silver, 128
Birds, nestling, the food for, 89, 169; in fruit nets, 441
Birkinshaw, Mr. T. W., presentation to, 41
Bitter-pit in Apples, 51
Black Knot disease (Plowrightia morbosa), 340
Blackman, Professor V. H., appointment of, 153
Blairgowrie, fruit prospects in, 388
Blakeney Point, Norfolk, the new nature reserve at, 97; field laboratory for, 168
Blakeslee, A. F., and C. D. Jarvis (*Trees in Winter*), 305
Board of Agriculture and Fisheries, the, 137; appointments under the, 237; new secretary of the, 25

BOOKS, NOTICES OF:—Alpine Flora (*Henry Correvon and Philippe Robert*), 200; Among the Hills (*Reginald Farrer*), 256, 331, 343; Art and Craft of Garden Making (*Thomas H. Mawson*), 266; Botanical Magazine, the, 73, 137, 237, 311, 370; Commercial Gardening (*John Weathers*), 248; Critical Revision of the Genus Eucalyptus, A (*G. H. Maiden*), 305; Crops and Methods for Soil Improvement (*Alva Agee*), 282; Dahlias (*George Gordon*), 240; Die Orchideen von Java, 338; Englishwoman's Year-Book and Directory (*G. E. Mitton*), 41; Flora of New Guinea (*Dr. H. A. Lorentz*), 199; Gardening (*A. Cecil Bartlett*), 417; Genus Iris (*W. R. Dykes*), 170; Graines et Plantules des Arbres et Arbustes indigènes et communément cultivés en France (*R. Hickel*), 187; Hand-list of British Lichens (*A. R. Harwood*), 75; Herbals; their Origin and Evolution (*Agnes Arber*), 304; Horticultural Directory (*Journal of Horticulture*), 41; Icones Plantarum Formosanarum (*B. Hayata*); Illustrations of Conifers (*H. Clinton Baker*), 418; Insecticide, Fungicides and Weed Killers (*E. Bourcart*), 152; Intensive Culture of Vegetables on the French System (*P. Aquatias*), 179; Irish Farming World Directory and Annual (*Irish Farming World*), 41; Journal of the Kew Guild, 137; Journal of the R.H.S. Gardens Club, 9; Livre d'Or du Monde Horticole (*Louis Gentil*), 386; Makers of British Botany (*F. W. Oliver*), 81; Mendel's Principles of Heredity (*W. Bateson*), 131; My Garden Diary (*Sutton and Sons*), 41; Nation's Library, the (*Messrs. Collins*), 370; Notes from the Edinburgh Botanic Garden, 329; Orchid World, 36; Photographic Almanac (*George E. Brown*), 41; Plant Diseases (*Dr. W. F. Bruck*), 186; Planters' Note-Book (*Robert Woodward, jun.*), 26; Practical Agricultural Chemistry (*S. J. M. Auld and D. R. Edwardes-Ker*), 130; Publications received, 10, 26, 42, 58, 106, 140, 169, 183, 209, 238, 359, 374, 409; Résultats de l'Expédition Scientifique Néerlandaise à la Nouvelle Guinée en 1907 et 1909 (*Dr. H. A. Lorentz*), 199; Ring of Nature (*G. G. Desmond*), 417; Rose Annual, 1913, 302; R. H. S. Diary (*Royal Horticultural Society*), 41; School Gardening, with a Guide to Horticulture (*A. Hosking*), 100; Small Gardens for Small Folk (*Edith Lering Fullerton*), 121; Smallholders' Year Book (*C. Arthur Pearson, Ltd.*), 41; Small Landholders' Handbook (*W. Williamson*), 90; Story of a Loaf of Bread (*Prof. T. B. Wood*), 310; Story of Our Trees (*Margaret M. Gregson*), 215; Sub-Alpine Plants, or Flowers of the Swiss Woods and Meadows (*H. Stuart Thompson*), 147; Sweet Pea Annual, 1913, 42; Syllabus der Pflanzenfamilien (*D. A. Engler*), 200; Traité Complet d'Arboriculture Fruitière (*F. Dufour*), 130; Trees in Winter (*A. F. Blakeslee and C. D. Jarvis*), 305; Tulips (*Rev. J. Jacob*) 37; Unsere Friesland-Laubgehölze (*Ernst Graf Silva Tarouca*), 402; Vinton's Agricultural Almanac and Diary (*H. Greenwood and Co.*), 41; Who's Who (*A. and C. Black*), 41; Writers' and Artists' Year Book (*G. E. Mitton*), 41
Books, prices of, 253; rare, 271; sale of, 106, 385
Bordeaux mixture, a recipe for, 64; for Potatos, 311; preparation of, 347
Boskoop Rose Show, 105
Botanic Garden for South Africa a national, 404
Botanists, vandalistic, 287
Bougainvillea Sanderiana, 204
Bourcart, E. (*Insecticides, Fungicides, and Weed-killers*), 152
Bowling green, the making of a, 33 50
Brachychilus Horsfieldii, 12
Brassavola Digbyana crosses, 66
Brasso-Cattleya Orpheus, 36
Brazier, Mr. George, appointment of, 41
Brown tail moth, the (Euproctis chrysorrhœa), 132
Bruck, Dr. W. F. (*Plant Diseases*), 186
Bulb garden, the, 10, 238, 418
Bulbophyllum patens, 363
Bulbous plants, the forcing of, 10
Broncho grass in South Africa, 121, 137
Bulgaria, travels in, 46

C

CABBAGE root fly, the, 27
Cabbage, early, 365, 388, 407; the manuring of, 387
Calanthe Regnieri, 66; C. Veitchii, 66
Calanthes, new, 89
California, seedcrop prospects in, 347; the big trees of, 9
Calochorti, 418
Calyx bursting in Carnations, 124
Cambridge University, school of forestry at, 178
Campanulas, spicate, 206
Camphor for snails, 387
Canada, 212; Apple-breeding in, 384; fruit-farming in, 386; the first Rose society in, 362
Candid opinion, a, 13
Canker and scab on Cox's Orange Pippin Apple, 51
Carnarvonshire school farm at Madryn Castle, 440
Carnations, calyx bursting in, 124; in America, 117; perpetual-flowering, 36, 198; perpetual-flowering and Mendelism, 122, 154, 209; perpetual-flowering in the Transvaal, 419; the propagation of, 7, 39, 59, 76, 107, 123, 154; watering, in winter, 85
Carrots, manuring of, 386
Cattleya Fabia, 114; C. Trianæ, "Queen of the Earth," 146
Cedars, at Wilton House, Salisbury, 271
Cedrus Libani, timber of the, 239
Celery "blight" or rust, 414
Centropogon Lucyanus, cultural notes on, 26

CERTIFICATED PLANTS: Aethionema armenum Warley hybrid, 299; Androsace tibeticum, 256; Asters: Falconeri, 357; Purdomii, 333; Astilbe "Britannia," 426; Auricula William Smith, 357; A. "Suffragette," 256; Begonia Lena, 357; Blandfordia Cunninghamii, 426; Brassocattleya amabilis "Goodson's variety, 126; B.-C. Clifton's magnifica, 193; B.-C. heatoner "Canary," 225; B.-C. Menda, 126; B.-C. Vilmoriniana var. Etna, 351; Brasso-Cattlælia King Emperor, 316

B.-C. L. Triune var. "Gratrixæ," 359; Brasso-Lælio-Cattleya Cooksonii, 94; B.-L.-C. Excelsior, 351; B.-L.-C. King Emperor, 258; B.-L.-C. Veitchii, The Dell variety, 334; Calceolaria "Clarefield Gem," 357; Campanula Stevenii nana, 357; Carnations: Lady Shrewsbury, 333; Mrs. Wilfrid Gott, 225; Scarlet Gem, 426; Thomas à Becket, 426; Cattleya Enid var. F. Lambeau, 62; C. Empress Frederick var. alba, 351; C. Enid var. Illustris, 359; C. Gaskelliana Fairy Queen, 427; C. Leda, 126; C. Magnet, 193; C. Mendelii May Queen, 351; C.-M. var. Regina, 359; C. Tityus Shrubbery variety, 193; C. Trianæ alba Souvenir de Louis Verdonck, 193; C. Trianæ Colossal, 158; C.T. "Ida," 242; C.T. "Snowflake," 194; C.T. The Baron, 126; Cœlogyne intermedia, 62; Crocuses: chrysanthus "E. A. Bowles," 92; "Kathleen Parlow," 126; Cupressus Lawsoniana Fletcheri, 357; Cyclamen "St. George," 61; Cycnoches species (provisionally named Cooperi), 30; Cymbidium Alexanderi "Fowler's" variety, 126; C. Gottianum, 392; C. Gottianum superbum, 351; C. Humblotii, 225; C. J. Davis, 92; C. Lady Colman var. Golden Queen, 92; C. Wiganianum, 127; C. Woodlandense, 14; Cypripedium Alcinida, 30; C. Amazon, 30; C. × Carola, 94; C. Duke of Marlborough, 194; C. Fouldsianum, 14; C. Goliath, 14; C. insigne var. "International," 46; C. Iona, 30; C. King Ferdinand, 127; C. Lady Dillon magnificum, 46; C. Lady Dillon West Point variety, 159; C. Mrs. E. G. Guest, 194; C. Mrs. F. Sander, 46; C. Princess Patricia of Connaught, 94; C. Richard Ashworth, 194; C. Rossendale, 46; C. Roundhead, 225; C. × Snowdon Range, 94; C. Waltonensis var. "W. Stevens," 94; C. Wellesleyæ, 127; C. West Point Monarch, 159; Cytisus Andreanus prostratus, 357; Delphinium "Mrs. F. Brewster," 390; Dendrobium bigibbum Lady Colman, 158; D. Harveyanum, 316; Douglasia lævigata, 225; Gladiolus, Queen of the White, 426; Gomezia Barkeri, 46; Habenaria Roebe'enii, 30; Helichrysum bellidioides, 256; Heliotrope The Speaker, 333; Hippeastrum (Amaryllis) Eurasian, 256; Iris gracilipes, 390; Lælia anceps Roeblingiana, 30; Lælio-Cattleya Britannica Westonbirt variety, 351; L.-C. Dominiana, Southfield variety, 225; L.-C. Duchess of Connaught, 359; L.-C. Fascinator-Mossiæ Burford variety, 334; L.-C. Firminii var. ardens, 62; L.-C. Frederick Boyle "Gatton variety," 351; L.-C. Ganymede Holford's variety, 351; L.-C. Gloriosa, 392; L.-C. Goldfinch "Ashlands" var., 14; L.-C. luminosa Holford's variety, 258; L.-C. Mrs. Temple "Ashlands" variety, 316; L.-C. Smilax Prince of Orange, 158; L.-C. Sylvia Princess Victoria Louise, 351; Lilac Hugo Koster, 158; Lindenbergia grandiflora, 29; Lissochilus streptopetalus, 334; Lonicera tragophylla, 357; Lycaste Skinneri var. "Her Majesty," 46; Maxillaria Fletcheriana, 258; Mazus rugosus, 158; Meconopsis Delavayi, 357; Miltonia Charlesworthii, 351; M. vexillaria Cringlewood variety, 242; Miltonioda Harwoodii Moss's variety, 158; Narcissi: 392; Caedmon, 258; Eurcpe, 258; Evangeline, 299; Judith, 193; Minicycla, 61; Mrs. Ernst H. Krelage, 258; St. Olaf, 258; Venetia, 299; White Emperor, 226; Nephrolepis exaltata Willmottæ, 357; Odontioda Bradshawæ variety "Hestia," 316; O. Chantecleer Orchidhurst variety, 351; O. Charlesworthii Perfection, 351; O. chelseiensis variety St. Fuscien, 351; O. Cooksoniæ Ralli's variety, 225; O. daltonensis, 242; O. Diana var. "Fire King," 127; O. Keighleyensis ignifera, 225; O. Madeline var. Prince of Orange, 62; O. Mossiæ, 158; O. St. Fuscien "Ward's" var., 194; O. Schroderiana "Highfield" var., 392; O. Wm. Thompson, 316; O. Zephyr "West Point" var., 194; Odontoglossum A. E. Thompson, 194; O. Aireworth "Borlase's" var., 359; O. A. "Goodson's" variety, 62; O. A. Orchid Dene variety, 391; O. amabile variety "Excelsa," 94; O. amabile Zeus, 299; O. Amandum, 92; O. Amethyst "Glebelands" variety, 126: O. ardentissimum Ebor, 92; O. Aurora, 316; O. ceres var. "Rossendale," 127; O. Cloth of Gold, 194; O. crispum Cobb's variety, 193; O. c. "J. Howes" variety, 316; O. c. militaris, 316; O. c. "Orchard Dene" variety, 316; O. c. Rotunda, 316; O. c. Snowball, 242; O. c. The Baroness, 427; O. Dreadnought, 316; O. eximium Alpha, 158; O. e. Armstrongiæ, 351; O. e. var. "Ellis Markindale," 127; O. e. Warnham Court variety, 225; O. George Day, 30; O. Georgius Rex, 351; O. × Harlequin, 127; O. Harryano-crispum "Ne Plus Ultra," 94; O. illustrissimum, 242; O. i. Westonbirt variety, 351; O. × James Barclay, 94; O. Jasper "Orchid Dene" var., 359; O. × J. Whitmoyer, 46; O. Lairessei, 391; O. leeanum majus, 194; O. Lord Pirrie, 94; O. Mrs. Thompson, 258; O. Neptune, 391; O. Northern Star, 127; O. Othmarschem 351; O. Pescatorei Lady Holford, 258; C. P. Sanderæ, 30; O. Phœbe splendens, 334; O. R. Le Doux, 94; O. Queen of Gatton, 351; O. Rossii majus Ward's variety, 242; O. triumphans "Hesperidas," 242; O. tripudians, Ward's variety, 242; O. Violina Henderson, 94; O. Wilkieanum var., 14; O. × Wm. Thompson, 316; Odontonia: Edna, 316; O. Firminii, 30; O. Lælia Sander, 351; Olearia Chathamica, 357; Omphalodes Cappadocica, 192; Oncidioda Bella, 427; O. Cooksoniæ. 92; O. Cooksoniæ Ashlands variety, 242; O. C. illustris, 351; O. C. Ralli's variety, 158; Oncidium crispum var. The Knowle, 46; O. McBeanianum, 351; Pæonia Gismonda, 426; P. "La Lorraine," 333; P. L'Espérance, 390; Papaver "Perry's Unique," 390; Pentstemon Davidsonii, 357; Philadelphus Norma, 426; Potentilla "Boule de Feu," 390; Primula "Excelsior," 390; P. La Lorraine, 299; P. Maximowiczii, 256; P. Purdomii, 192; P. viscosa "Beauty," 256; P. v. "Jean Douglas," 225; P. v. "Othello," 225: Polypodium irioides pendulum grandiceps, 91; Rhododendron Rose Queen, 333; R. Wightii, 333; Roscoea cautlioides, 357; Roses: Erna Teschendorff, 299; Irish Fireflame, 357; Lady Plymouth, 317; Madame Edouard Herriot, 317; Miss Flora Mitten, 333; Mrs. Campbell Hall, 357; Mrs. Charles Russell, 61; Mrs. Forde, 317; Mrs. George Beckwith, 317; Mrs. George Norwood, 426; Nancy Perkins, 357; Paul's Lemon Pillar, 426; White Tausendschön, 357; Willowmere, 317; Salix magnifica, 390; Sarracenia Brucei. 357; Saxifraga × Faldonside, 158; S. Grandfieldii, 357; Saxifraga Brunoniana, 426; S. longifolia var. magnifica, 390; Sophro-Cattleya Saxa "Orchid Dene variety," 62; Spiræa Sargentiana, 426; Stachys corsica, 390; Statice Suworowii alba, 426; Styrax Wilsonii, 357; Sweet Peas, Edith Taylor, 426; Frilled Pink, 426; Thunbergia Gibsonii, 333; Trollius patulus Bees' variety, 426; Tulips, 392; T. Massenet, 333; Vanda Amesiana albens, 46; Wallflower Primrose Monarch, 299.

Chalk, Yewwoods and Beechwoods on the, 364
Cheese, Stilton, the microflora of, 293
Chelsea, the R.H.S. Spring Show at, 329, 346, 349, 369, 372, 407
Chemistry of the soil, 253
Chester's new magistrates, 21
Chicorée de Bruxelles, 58
Chicory, Witloof, the cultivation of, in Belgium, 405
China, plant collecting in, 129, 370, 418
Chlora grandiflora, 188
Chlorosis in plants, 188
Chrysanthemums: cultural hints on late varieties, 4; good market, 217; in Johannesburg, the culture of, 376; magnesium salts and, 238; manure for, 160; Mrs. Maud Jefferies, 155; Queen Mary, 73; potassium permanganate for, 253; stopping, 244; use of sulphur in the soil for, 223, 240, 272, 312
Chuck, Mr. W., 73, 209
Chysis, notes on, 139
Cinematograph, the bee and the, 73
Civilisations, bygone, the last traces of, 88
Claytonia perfoliata (Winter Purslane), 201
Clematis Armandii, 322
Clovers, the Sweet Pea and, streak affecting, 215
Cleisostoma Wendlandorum, 66
Cliveden, Buckinghamshire, 65, 82
Clover sickness, 136
Coat, to make a painted, 432
Cocker, William, the late, 159
Coke, selling by weight, the unfairness of, 171, 240
Colonial note, 59
Colour in apples, 51
Columnea glabra major, 238
Combretaceæ, the South African, 52, 67, 116, 140, 146, 164, 181, 201, 231
Commercial plant, a valuable, 387
Coniferous seedlings, damping off of, 186
Conifers, dwarf, notes on, 21
Copper sulphate, impure, 385
Corn crops, the, 386
Correvon, Henry, and Philippe Robert (*The Alpine Flora*), 200
Corsican Pine, the, 28, 45, 59, 77, 90, 106, 124
Crisp, Sir Frank, honour for, 9
Crop prospects in France, 386
Crops, the world's, 9
Croquet ground, dimensions of a, 175, 196
Crowea saligna, 26
Crown gall, 387; New Zealand prohibition against, 121
Crump, Mr. William, 76
Cultural memoranda, 19, 285, 398
Cutbush, Mr. W. H., on the propagation of the Rose, 373
Cuttings, transporting dormant, 341
Cyanide, fumigating with, 280
Cyclamen, culture of, 130, 172, 189, 209; remarkable, 187
Cypripedium bellatulum, 416; C. Demeter, 3; C. insigne Sanderæ, 230; C. "Roundhead," 230
Cytisus Adamii, 441; C. Ardoinii, 306

D

Dahlias, collerette, 85
Daffodils, prices of new, 253
Daisies in cricket ground, 196
Dalmatia, Iris hunt in, 321, 338, 363
Darwin, Sir Francis, honour for, 9
Davidia involucrata, the flowering of, 311, 332, 371
Delphiniums, the propagation of, 128
Dendrobium Ainsworthii splendidissimum, 162; D. Cybele album, 139
Dendrobiums at Belsize Court, Hampstead, 247
Denmark, progressive, 73
Den of Mains Park, Dundee, 58
Diploma in horticulture proposed, 168, 186, 190
Disa stella, 435
Diseases, plant, French research in, 323; International aspect of, 330
Douglasia lævigata, 381
Dowson, Mr. Walter John, appointment of, 237
Dreer's, Messrs. H. A., nurseries, 179
Dublin, the new professorship of forestry at, 163
Dufour, F. (*Traité Complet d'Arboriculture Fruitière*), 130
Dumfries, gardeners' dinner in, 13
Dundee, gift of a park to, 26
Dunn, Mr. Stephen Troyte, appointment of, 237
Dunstan, Wyndham R., honour for, 9
Dykes, W. R. (*The Genus Iris*), 170
Dynamite explosives, cultivating ground by means of, 169

E

Easter and Kew, 205
Edgworthia chrysantha, 135
Edinburgh gardeners to combine, 188
Edinburgh Royal Botanic Garden, employés, 105; notes from, 329; proposed guild for, 240
Edinburgh winter garden, proposed site for, 173
Educational Colonies Association, 121
Edwardes-Ker, D. R., and S. J. M. Auld (*Practical Agricultural Chemistry*), 130
Edward, Thomas, memorial, 142
Eelworm, formaldehyde and, 48
"Egap" plant trainer, the, 336
Egg train in North Wales, 253
Elementary species, 42
Elm, dangers of the, 386, 407; curious behaviour of an, 441
Employment, gardening, in France, 32
Engler, D. A. (*Syllabus der Pflanzenfamilien*), 200
Eremuri, culture of, 32
Escallonias, 199
Euproctis chrysorrhœa (the Brown Tail Moth), 132
Eustoma Russellianum, 188
Evans, E. H., appointment of, 254

Evesham, market gardening in the vale of, 58, 156; fruit prospects at, 413

F

Farming, fruit-growing and, in 1912, 124
Farrer, Reginald (*Among the Hills*), 256, 331
Fecundity, the inheritance of, 120
Federal societies, the formation of, 142
Fernery, the, 249
Ferns, at the Ghent Show, 331; hardy British, treatment of, 249
Fertilisation, self, versus cross, 154
Fertiliser, manganese as a, 253
Field laboratory for Blakeney Point, 168
Fifeshire, new park for, 340
Fig, unfruitful, 244
Floods in Perthshire, the, 340
Flora of the Malayan Peninsula, 187
Florists' flowers, 36, 85, 99, 122, 130, 155, 191, 198, 217, 248, 325
Flour paste as an insecticide, 384
Flower garden, the management of, 6, 22, 39, 55, 86, 70, 103, 119, 134, 151, 166, 184, 203, 218, 234, 251, 268, 289, 308, 345, 366, 383, 401, 420, 436
Flower pots made of bamboo, 26
Flower show, the U.S.A. national, 84
Flowers, double, 252; in blossom, 138; in season, 106, 253, 404; spring, in the south-west, 339; the pigments of, 25
Ford, William, the late, 172
Foreign correspondence, 44, 58, 81, 99, 149, 201, 285, 331, 365, 381
Forest products and timber, research work in, 168
Forestry: demonstrations in, in Norfolk, 337; professorship in, Dublin, 163; in Aberdeenshire, 372; International congress on, 223; notes on, 141, 171, 239, 286, 364, 398; school of, at Cambridge University, 178
Formaldehyde and eelworm, 48
Formosa, illustrations of the plants of, 418
Foxgloves, Irises and, at Newlands, Harrow, 423
France, crop prospects in, 386: gardening employment in, 32; hours of labour in, 58
French garden, the, 23, 55, 87, 150, 167, 203, 235, 250, 289, 367
French research on fungous diseases, 323
French Society of Chrysanthémistes, the, 222
Fruit and farming in 1912, 124
Fruit blossom, damaged by bullfinches, 332; experiments in the pollination of hardy, 190
Fruit blossom and foliage, a preliminary note on a bacterial disease of, 287
Fruit-buds not flowering and blossom withering, 407
Fruit crops, the, 407; in Kent, 434; in the Evesham and Pershore districts, 413; in Germany and Austria, injury to the, 285
Fruit-farming abroad, 204, 365; in Canada, 386; in 1912, 68
Fruit-garden, the market, 20, 51, 101, 118, 148, 213, 301, 332, 377
Fruit-growing in Nova Scotia, 41
Fruit prospects in Blairgowrie, 388; in North Scotland, 436
Fruit research station in Kent, 137
Fruit trade, the, 89
Fruit tree buds, the ice-box method of keeping, 386
Fruit trees, and ripened wood, 13, 28, 45, 60, 77, 91, 124; in grass land, 100; spraying, in flower, 241; stopping the shoots of, 207; transplanting young, 107
Fruits, cultivated, the history of, 395; of the East, the, 56; in Jamaica, 406; under glass, the culture of, 6, 23, 38, 55, 70, 86, 102, 119, 150, 166, 185, 202, 218, 234, 251, 269, 288, 309, 326, 345, 367, 383, 401, 421, 437
Fullerton, Edith Loring (*Small Gardens for Small Folk*), 121
Fungicides for leaf curl, 423
Fungous diseases, French research on, 323

G

Gage plums, 106
Galloway, Professor B. T., 222
Gardeners' Company, the, 438
Gardeners, three famous, 76, 90
Gardening employment in France, 32
Genetics, report of the fourth International conference on, 205
German Emperor as an agriculturist, the, 120
Germinator, a simple, 386
Ghent, International congress of agriculture at, 26; Quinquennial Exhibition, 57, 253, 290, 294, 313; Ferns at the, 331; modern village at, 137; summer horticultural exhibition at, 370, 439
Gipsy Moth, the (Liparis dispar), 263
Glasgow International Exhibition, and Queen's Park, Glasgow, 173
Glasgow parks, gift of plants to, 13; salary of superintendent at, 372
Glass-houses, movable, 241, 255; Mr. Pullen-Burry's lecture on, 427, 442; rates on, 273
Goodacre, Mr. J. H., 76
Gooseberry bushes, "tipping," 187
Gordon, George (*Dahlias*), 240
Gould, Mr. J. C., retirement of, 385
Grapes, Belgian, 188; colour and bloom of, 433; grown without artificial heat, 80; thinning, 281; Madresfield Court, 45, 60
Grape growers, hints to, 245
Grass, Broncho, in South Africa, 121; effect of, on tree growth, 238; mud-binding, 237
Grass land, growing fruit trees in, 100
Grasses and trees for the sea coast, 376
Greenhouses, movable, 241, 255, 427
Gregson, Margaret M. (*The Story of our Trees*), 215
Gregynog, Montgomeryshire, 232
Grenfell, Lord, as a gardener, 438
Grenoble, a national park at, 271

H

Half-holiday, nursery employés, 44
Hamamelis mollis, 27
Hamamelis, notes on some species of, 4
Hammersmith, St. Peter's Square, 404
Hankins, Mr. Charles, appointment of, 122
Han River, a voyage up the, 129
Hardy flower border, 53
Hardy fruit garden, work in the, 7, 23, 39, 54, 71, 86, 102, 118, 134, 151, 166, 185, 218, 235, 251, 268, 309, 326, 366, 383, 401, 421, 437
Haricot, a new, 25
Hawthorns, American, some new arborescent species of, 114
Hayata, B. (*Icones plantarum Formosanarum, etc.*), 418
Heal, Mr. John, 254; accident to, 347, 370
Heather beetle, the (Lochmœa saturalis), 124
Heaths, hardy, 304
Hedera, new species of, 9
Helichrysum bellidioides, 436
Helianthi in Hungary, experiments with, 423
Hemsley, Mr. W. Botting, honour for, 205, 222
Henry, Mr. Augustine, 163; appointment of, 122
Herbage studies, 74
Heredity and mutation, lectures on, 89, 118, 164, 189, 200
Hickel, R. (*Graines et Plantules des Arbres et Arbustes indigènes et communément cultivés en France*), 187
Holiday, the half, 330
Hollyhock disease affecting plants for two successive seasons, 441
Holly leaves, voles eating, 172, 190
Holyrood Palace, decorations at, 372
Hooker, Sir Joseph, a Kew memorial to, 171; lecture fund, 105, 153; notes on the life of, 5
Hops, the manuring of, 137
Hornbeam, a remarkable, 397
Horses, Lathyrus sativus as food for, 240, 273
Hortensias, blue-flowered, 422, 441
Horticultural colleges for women, 280
Horticulture, examinations in, 404; Lancashire County Council School of, 347; progress of, 72; what is, 138, 186
Horwood, A. R. (*Hand-list of British Lichens*), 75
Hosking, A. (*School Gardening, with a guide to Horticulture*), 100
Howe, Mr. William, theft from, 387
Humea elegans, 387
Hungary, experiments with Helianthi in, 423
Husbandry, the progress of, 14, 75
Hyacinth growing in an inverted position, 104
"Hybrid," the term, 59
Hydrangeas, blue-flowered, 422, 441
Hydrogen cyanide in plants, 74

I

I'Anson, Mr. G., presentation to, 9
Ice-box method of keeping fruit tree buds, 386
Incendiarism at Trevethan House, 205
Indian Azaleas, 324
India, notes from, 406
Inheritance of fecundity, the, 120
Insecticide, flour paste as an, 384
Insects and pests, destructive, 69, 132, 161, 263, 284, 340, 380
Insects, the destruction of, by mercury vapour lamps, 169
Insurance, national health, 424
International congress of agriculture, tenth, 58
Ipomœa rubro-cœrulea, 104
Ireland, notes from, 325; seed testing station in, 330
Iris and Foxgloves, 423
Iris bucharica, 313; I. caroliniana, 44
Iris garden in winter, an, 177
Iris hunt, a Dalmatian, 321, 338, 363
Irises, cultivation of, 244: dwarf, for the spring garden, 229; some early flowering, 17, 273; some rare, 399; trial of, 425
Italy, Southern notes from, 81, 149
Jacobinia chrysostephana, cultural notes on, 39

J

Jacob, Rev. J. (*Tulips*), 37
Jam, the adulteration of, 210
Jamaica, fruits in, 406
Japanese Larch, the, 121
Japanese Plums, 99
Jarvis, C. D., and A. F. Blakeslee (*Trees in Winter*), 305
Jatropha curcas (Purgueira), a valuable commercial plant, 387
Jaysinia Botanic Garden, 122, 13
Jersey Kale, the long-stemmed, 2
Johannesburg, culture of Chrysanthemums at, 376
Juices of plants, the digestive, 32
Juvenile characters in plants, 272

K

Kale, Jersey, the long-stemmed, 273
Kearsney Court, Kent, 438
Keeble, Dr. F. W., 153
Kemp, Mr. George, 9
Kent fruit research station, the, 137
Kew Gardens, and town planning scheme, 205; closed houses at, 237; storm at, 311; Easter and, 205; employés' wages at, 169; fatal accident to an employé at, 254; gardeners' entertainment at, 57; gift of Orchids to, 105; official guide for visitors to, 209; wilful damage at, 105, 153
Kew Guild dinner, 311, 373
Kew memorial to Sir Joseph Hooker, a, 171
Kew notes, 3, 146, 209, 304, 409
Kew, plants in flower at Christmas at, 3
Kirby, Mr. A. H., appointment of, 311
Kirkcaldy Horticultural Society, damages against the, 272
Kitchen garden, the management of the, 6, 22, 38, 54, 71, 87, 103, 119, 134, 150, 167, 185, 203, 219, 235, 250, 268, 289, 309, 327, 344, 366, 382, 400, 420, 437

L

Labour, hours of, in France, 58; scarcity of, in America, 408
Laburnum, with three kinds of flowers, 441
Lælia Gouldiana, 36
Lælio-Cattleya Aphrodite splendens, 363
La Mortola, the rockery at, 369
Lamps, mercury vapour, for destroying insects, 169
Lancashire County Council School of Horticulture, 347
Land duty, undeveloped, 172, 372
Langley, Batty, as a gardener, 143
Larch sawfly pest in the Lake district, the, 49
Larch, the Japanese, unsuitable for heavy soils, 121
Lathyrus luteus, crossing with the Sweet Pea, 173
Lathyrus sativus as food for horses, 240, 273; L. tingitanus, 408
Lawn manure, 144

Law Notes: Defrauding a nursery firm, 173; Failure of a nurseryman, 375; flooding of an Edinburgh market garden, 410; Gardener's notice, a, 212; growers and undeveloped land duty, 77, 111; Horticultural society, action against a, 47; Land duty, undeveloped, 46, 77; Rose sale dispute, 141; Trees, overhanging, 77; What is a small-holder? 392
Lawn tennis ground, the, 163
Lawrence, Sir Trevor, retirement of, 220, 236
Leadbetter, Mr., appointment of 209, 240
Leaf curl, fungicides for, 423; o Potatos, 253
Leamington Carnation Carnival, 22
Leaves, migration of mineral substances from, 56; loss of water by young and old, 88
Lebanon Cedar, timber of the, 23
Lectures at South Kensington, 4
Leonardslee, plants in flower at, 407
Leptospermum scoparium Nichollsii, 255



Photograph by E. N. Roff.

KEARSNEY COURT, NEAR DOVER, THE RESIDENCE OF E. P. BARLOW, ESQ.

Printed by Temple Press Ltd., London, E.C.

Lettuces, large, 404
Libocedrus Craigana, 325
Ligustrum japonicum coriaceum, 265
Lilies, the culture of, 228
Lilies in 1912, 1
Lily-of-the-Valley for market, 228
Lime-sulphur and Bordeaux mixture for spraying Potatos, 293
Lime-sulphur and nicotine sulphate, 412
Lime, yellowing in plants, due to an excess of, 422
Limonia Poggei var. latialata, 378
Lindenbergia grandiflora, cultural notes on, 27
Linum campanulatum, 381
Liparis lacerata, 99; L. dispar (the Gipsy Moth), 263; L. monacha (the Nun Moth), 380
Little, Mr. William, presentation to, 106
Livingstone as a botanist, 222
Lobelia erinus floribunda, fl. pl., 89
Lochmœa saturalis (the Heather Beetle), 124
Lock, Dr. R. H., appointment of, 237
Lockhurst, Mr. H. G., presentation to, 271
Locusts, 107
Loiseleuria procumbens, 343
L.C.C. Parks Committee, 188, 253
Lorentz, Dr. H. A. (*Resultats de l'expédition Scientifique Néerlandaise à la Nouvelle Guinée en* 1907 *et* 1909), 199
Lycaste Skinneri, 114

M

MACKENZIE, Mr. Alexander, testimonial to, 222, 347
McLeod, Mr. J. F., legacy to, 272
M'Millan, Mr. W., presentation to, 372
Madryn Farm School, 254, 440
Magnesia and Roses, 59
Magnesium salts and Chrysanthemums, 238
Maiden, J. H. (*A Critical Review of the Genus Eucalyptus*), 305
Maitland, Mr. T. D., appointment of, 311
Maize, the sugar content of, 106
Malayan Peninsula, flora of the, 187
Manganese as a fertiliser, 253
Manor House, Wendover, Buckinghamshire, Hornbeam at, 397
Manual work in rural schools, 423
Manure, sulphur as a, 188
Manuring of Cabbage, 387; of Carrots, 386; of Hops, 137
Marguerite Mrs. F. Sander, 248, 273
Market fruit garden, the, 51, 101, 118, 148, 213, 301, 332, 377
Market gardening, 58, 156, 408; book on, 205
Marshall, Mr., fatal accident to, 254
Masdevallia triangularis, 162
Masters, Dr. M. T., and "Vegetable Teratology," 439
Matthiola pedemontana, 152
Mawson, Thomas H. (*The Art and Craft of Garden Making*), 266
Mayhew, Mr. Charles, appointment of, 153
Mayne, Mr. J., 311
Mazus rugosus, 190, 210, 240
Mealy Bug on vines, 128
Megaclinium eburneum, 246
Melons, artificial manure for, 48
Mendelism and perpetual-flowering Carnations, 122, 154, 209
Mercury vapour lamps for destroying insects, 169
Mice, field, plague of, 280; in the garden, 79; trapping, 112
Micro-organisms, mutation in, 438
Miln, Mr. George P., new appointment of, 21
Moles, trapping, 244
Monro, Geo., Concert Committee, 88
Mons, J. B., life of, 395
Moraines, 154
Moss, eradication of, 121
Mummy Pea, the, 176
Musanga Smithii, the reproduction of, 370
Mussaenda, the genus, 59
Mutation, heredity and, 89; in micro-organisms, 438

N

NAMES, plant, abbreviation of, 386
Narcissi, poetaz, 239
Narcissus, "White Emperor," 239
Nature reserves, 8, 97
National Flower Show, the U.S.A., 84
Naunton, Mr. W. W., honour for, 106; testimonial to, 154
Nectarines and Peaches out-of-doors, thinning, 371
Nesting box exhibition, 73
Nests, remarkable find of, 270
Nettles, stinging, the destruction of, 169
Newstead, Professor Robert, new appointment for, 21
New York International Exhibition, British successes at the, 293
New Zealand prohibition against crown gall, 121
Nicotine, commercial value of, 169
Nicotine sulphate and lime sulphur, 412
Nitrates from the soil, the loss of, 57
Nomenclature of hybrid Orchids, 13
Norfolk, forestry demonstrations in, 337
North Wales, the poultry industry in, 169
Nova Scotia, fruit growing in, 41
Novelties of 1912, 2, 18, 43
Nun Moth, the (Liparis monacha), 380
Nursery employés, entertainment of, 9, 57; half-holiday for, 44, 330; excursion of, 440
NURSERY NOTES: Bide and Sons, S., 47; Bull and Sons, Wm., Chelsea, 302; Piper and Sons, J., Barnes, 408; Sutton and Sons, Reading, 132, 342
Nyassaland Protectorate, 106
Nymphæa, gigantea var. Hudsoniana, 423

O

OAK timber, brown and green, 171, 209
OBITUARY: Avebury, Lord, 375; Bennett, William, 195; Bruckhout, Dr., 14; Clark, George, 195; Cocker, William, 159; Cooper, Thomas, 360; Don, Alex. L., 394; Ewing, Wm., 394; Ford, W., 128; Fraser, James, 394; Gilmore, Thomas, 243; Grady, Martin, 160; Grolez, Jules, 48; Hart, Walter, 14; Heath, Francis George, 212; Hemming, George, 394; Hill, Daniel, 393; Hindmarsh, W. T., 319; Howell, A., 262; Husbands, Isaac, 14; Kay, Charles, 336; Kingsmill, Andrew, 227; McDonnell, Patrick, 94; McGregor, John, 14; McKinlay, George, 393; M'Leod, Norman, 336; Martin, John, 94; Methven, John, 375; Morgan, J. Pierpont, 227; Nicholas, John, 94; Nicol, Robert Hay, 128; Pearson, H. J., 112; Perry, Amos, 410, 425; Pilling, Charles Ernest, 432; Robbie, Archibald, 319; Ross, John, 94; Ryall, A., 79; Shearer. William, 79; Shepherd, R. W., 112; Späth, Franz Ludwig, 319; Späth, L., 112, 262; Temple, John T., 128; Theobald, William, 48; Tickner, Walter, 173; Van Geert, Auguste, 48; Webb, Edward, 64, 94; Whitelaw, William, 14; Williams, Charles, 195; Winfield, H. T. W., 432
Odontiodas: Bradshawiæ Mocatta's variety, 435; Cupid, 363; Penelope, 363; Venus, 323; Wm. Thompson, 338
Odontoglossum hybrids at Walton Grange, 146
Odontoglossums: caloglossum, Thompson's var., 416; eximium "Warnham Court" variety, 246; Pescatorei Lady Holford, 283; Princess Mary, 329; pulchellum majus, 139; splendidissimum, 230
Oils, vegetable, 122
Oliver, F. W. (*Makers of British Botany*), 81
Olivier, Sir Sydney, appointment of, 25
Omphalodes cornifolia, 380
Oncidium excavatum, 99
Onion-growing in Australia, 404
Oranges, English, 73
Orchid houses, the management of, 7, 23, 38, 54, 70, 86, 102, 119, 135, 150, 167, 184, 202, 219, 234, 250, 269, 288, 308, 327, 345, 366, 383, 400, 421, 436
Orchid notes and gleanings, 3, 36, 66, 99, 114, 139, 146, 162, 230, 283, 303, 323, 338, 363, 416, 435
Orchid novelties of 1912, 2
Orchid pollen, theft of, at the R.H.S. Shows, 222
Orchid show at Birmingham, 230
Orchids at the Dell, Englefield Green, 285; at the Warren House, Stanmore, 99; epiphytic, 246; gift of, to Kew, 105; new, in 1912, 18; nomenclature of hybrid. 13; sale of, 222, 370
Orphan Fund, Royal Gardeners' (annual meeting), 110, 205, 293, 386; annual dinner), 342
Oxlip Primrose, fasciation in, 323

P

PÆONIA Delavayi, 405; P. L'Espérance, 424
Pæony blooms, retarding, 424
Page, Mr. Walter, the new American Ambassador, 222
Palm leaves turning yellow, 16
Palms for export, packing, 57; new genus of, from Colombia, 282
Papaver orientale, abnormal bloom of, 338
Parasites of pitcher plants, 10
Paris congress of horticulture, 1913, 222
Park, a national, at Grenoble, 271; gift of, to Dundee, 26; new Fifeshire, 341; Selkirk new public, 45
Park employés, public, examination of, 106
Parks and gardens, public, 207, 289, 344, 367, 382, 400
Parks, gift of plants to Glasgow, 13; condition of employment in the London, 175
Peach trees, the training of, 145, 189, 209
Peach-house border, renewing a, 96
Peaches and Nectarines out-of-doors, thinning, 371
Peaches, Apples and, cold storage of, 236; bud-dropping in, 48
Pea, culinary, a bacterial disease of, 74
Peas, late, 13
Pea thrips, 313
Pergola, tarring a, 16
Perkins, Mr. Henry, presentation to, 347; retirement of, 57
Perry, Amos, the late, 410, 425
Pershore, fruit prospects at, 413
Perthshire, the floods in, 340
Pests, scheduled, 69, 132, 161, 263, 284, 340, 380
Phaseolus acutifolius var. latifolius, 25
Phlox decussata, propagating, 160
Phosphorescent plants, 8
Phthorimæa operculella, the Potato moth, 284
Phylloxera, 190
Phytophthora infestans, the sexual spores of, 328
Picea Omorica, 146
Pigeons, wood, reduction in number of, 120
Pigments of flowers, the, 25
Pine seeds, experiments on extracting, 26
Pine, the Corsican, 28, 45, 59, 77, 90, 106, 124; the value of, 106
Pinks, dwarf-growing, 254
Pine, Balsam, 432
Pinus Ayacahuite, 146
Pisum sativum, a bacterial disease of, 74
Pitcher plants, parasites of, 10
Pittosporum with pink flowers, 172
Plant collecting in China, 129, 370, 418
Plant diseases, international aspect of, 330
Plant names, abreviation in, 386
Plant notes, 26, 131, 135

PLANT PORTRAITS:—Agave Haynaldii, 137; Aloë Marlothii, 237; Amorphophallus corrugatus, 73; Aster Purdomii, 73; Cistus Loretii, 312; Clerodendron Bakeri, 73; Cocculus trilobus, 312; Cœlogyne cristata, 137; Cytisus × Dallimorei, 237; C. nigricans, 137; Dendrobium Schuetzei, 371; Deutzia longifolia, 370; Heliotropium anchusæfolium, 137; Hypericum Kalmianum, 312; Magnolia salicifolia, 237; Pyrus ioensis, 312; Rhododendron sublanceolatum, 137; R. Wightii, 370; Rosa sertata, 73; Ruellia Harveyana, 237; Sansevieria æthiopica, 311; Senecio stenocephalus, 73; Strongylodon pseudolucidus, 371
Plant trainer, the "Egap," 336
Plants in flower out-of-doors, 28; at Leonardslee, 407

PLANTS, NEW OR NOTEWORTHY:—Alocasia colossa, 295; A. Micholitzii, 295; Aralia triloba, 322; Asparagus gracillimus, 295; Calanthe Laselliana, 89; C. Whitinæ, 89; Chamædorea pumula, 294; Dieffenbachia Sanderæ, 295; Dracæna regalis, 295; Echium Wildpretii, and other species, 19; Eriobotrya japonica variegata, 295; Hernandia cordigera, 322; Lilium regale, 416; Maranta Sanderæ, 295; Megaclinium triste, 131; Narcissus Evangeline, 330; N. St. Olaf, 330; Pæony La Lorraine, 295; Phœnix andamanensis, 294; Populus Maximowiczii, 198; Polypodium Bartelsii, 295; Primula pseudo-denticulata, 264; Pterostyrax Henryi, 19; Rhododendron dahuricum semper-virens, 230; R. hæmatocheilum, 214; R. pallidum, 264; R. virgatum album, 230; Rhododendrons, two hybrid, 230; Socratea Forgetiana, 294; Stilt Palms from Colombia, new genus of, 282; Streptocarpus orientalis, 214; Trevesia Sanderi, 295
Plants, new, the R.H.S. and, 387; juvenile juices of, 272; the digestive juices of, 328; that never grow up, 236, 255; under glass, 7, 22, 39, 54, 70, 87, 102, 118, 134, 151, 166, 184, 202, 218, 235, 250, 269, 288, 308, 326, 344, 366, 382, 400, 420, 437
Plowrightii morbosa (Black Knot disease), 340

Plums: gage, 106; Japanese, 99
Poetry and plants, 293
Pollination of hardy fruit blossoms, experiments in the, 190
Polygonum polystachyum in Straffan House Gardens, 329
Pomologists, lives of the great, 395
Pont de Nant, Alpine garden, 42, 52, 152, 272
Poppy, abnormal growth of, 338
Potassium permanganate for Chrysanthemums, 253
Potato, Batata or sweet, 332, 343
Potato crop, the, 404
Potato Moth, the, 284; in India, 406
Potato, disguises of the, 205; Bordeaux mixture for, 311; leaf curl of, 253; lime-sulphur and Bordeaux mixture for spraying, 293; Rhodesian restriction on, 42; "seed," the scarcity of, 237; the scarcity of, 293; wart disease and deep cultivation of, 254
Poultry industry in North Wales, the, 169
Primrose, oxlip, fasciation of, 323
Primula, Chinese species of, paper on, 275
Primula conference, the, 236, 259, 270, 273, 275
Primula hybrids in nature, 276
Primulas and Cyclamen at Reading, 132
Primulas, European, lecture on, 276; Himalayan, 275; in the garden, 275
Primulas: Allionii, 85; Fortunei, 238; "Jean Douglas," 267, Sieboldii, culture of, 412
Prunus Avium, 304; P. cerasifera atropurpurea Moseri fl. pl., 190; P. Pennsylvanica, 237; P. subhirtella, 285; P. tomentosa, 146
Puccinia malvacearum, 441
Pullen-Burry's, Mr., moving glasshouses, 241, 427, 442
Purgueira (Jatropha curcas), a valuable commercial plant, 387
Purslane, Winter, 201
Puya chilensis, 189, 210
Pyrethrums, the propagation of, 160

Q

Queen's Park, Glasgow, and the proposed exhibition, 173

R

Rainfall of 1912, the, 74, 91, 173
Ranunculus glacialis, 117
Raspberry-Strawberry, a, 271
Regent's Park, Crown lands belonging to, 440
Rhodesian restriction on the importation of Potatos, 42
Rhodochiton volubile, 310, 332
Rhododendron exhibition at Westminster, 372
Rhododendrums: cinnabarinum, 425; concinnum, 341; dauricum, 51, 138; pallidum, 230, 264, 332, 343; ponticum var. aucubæfolium, 27
Rhododendrons, grafting, in Holland, 264; Himalayan, in Cornwall, 397; injury to, 313; small-leaved, 419; variegated, 60
Riviera flower season, the, 99
Robert, Philippe, and Henry Correvon (*The Alpine Flora*), 201
Rockery, ideal, the construction of an, 133 153, 178, 247, 364
Rock garden, the, 306
Rock plants, a new method of growing certain, 312
Rogerson, the late Mr. Robert, 372
Rolfe, Mr. R. A., honour for, 370
Romneya Coulteri, 209
Roots, the length of, 347
Rosa alba, 388
Rosary, the, 12, 36, 68, 84, 114, 162, 181, 267, 302, 323, 378, 396
Rose show at Boskoop, 105
Rose society in Canada, the first, 362
Roses, artificial, at the exhibitions, 123, 173; climbing, 197; cultural notes on, 12, 84, 162, 267, 302, 361, 396; for a south wall, 144; forcing in America, 84; King George presents a cup for, 222; Lenten, 77; lecture on propagating, 378; magnesia and, 59; notable crimson, 36; novelties in, 301; packing for post, 336; perpetual-flowering climbing, 380; saw flies attacking, 407; seedling, 12; striking, from cuttings, 244; the foliage of, in spring, 197; trials of, at Bagatelle, 68; under glass, 361, 397; white, for garden culture, 114; winter propagation of, 47; yellow garden, 181; Ellen Poulsen, 302
Rothamsted Experimental Station, 423
Royal Academy Exhibition, the, 331
Royal Counties Show, 385
R.H.S. Council, the, 222; criticism of the, 368, 388; R.H.S. spring show at Chelsea, 138, 329; trials at Wisley, 13; trials of sundries, 169; and new plants, 387; new president of the, 168
Rubber market, the, 254
Rubber, new work on, 347
Rucksac, 237
Runciman, Mr., in Holland, 169
Ruse, Mr. Louis Frederic, appointment of, 237

S

St. Petersburg botanic garden, bicentenary of, 385, 423
St. Peter's Square, Hammersmith, 404
St. Vincent, vanilla cultivation in, 370
San Francisco international show, 311
San José scale insect, 69
Saw-fly pest of Larch in the Lake district, 50
Saxifraga × Faldonside, 214, 273; S. longifolia, 441
Saxifragas, trial of, 425
Scab and canker on Cox's Orange Pippin Apple, 51
Scale insect, the San José, 69
Schizocodon soldanelloides, 198
School gardens in Shetland, 13
School of Horticulture, the Lancashire County Council, 347
Schools, rural, manual work in, 423

Scientific Committee: -- Abies bracteata fruits, 142; Adioda × St. Fuscien, 46; Amaryllis Belladonna, delayed flowering of, 274; Anthurium × conchiflorum, 334; Apple sawfly, the, 442; Apples with many or no pips, 77; Ash, early-flowering, 77; Bitter pit in Pear, 108; Cattleya Mossiæ, bud sport of, 427; Chionoscillas, 173; Crocus biflorus Weldenii, 108; Cyclamen with branching inflorescence, 46; Cycnoches Cooperi, 46; Cyrtanthus, epiphytic, 173; Dahlia plants failing, 211; Daffodils from New Zealand, 427; Datura arborea, 46; Dendrobium fuscescens, 77; Epidendrum ciliare × Lælia cinnabarina, 46; E. kewense, 274; Fennel, insect attacking, 46; Ferns, alleged poisoning by, 211; Foxglove, a branched, 442; Gooseberries affected with Botryosphæria ribesii, 442; Hippeastrum "runners," 173; Holly growing on shingle beach, 211; Lælia Lundii, 108; Lælio-Cattleya "Freak," 427; Lathyrus sativus poisonous, 211; Locusts and Coconuts, 242; Miltonia vexillaria × Odontoglossum crispum, 46; Narcissus, effect of frosts on, 334; with frilled trumpet, 173; variation in wild forms of, 334; Narcissus triandrus albus × N. cyclamineus, 173; Oak, blue, 442; Odontioda Patricia, 274; Odontoglossum × "Saturne," 173; Odontonia × "Cybele," 173; Oncidioda × Cooksoniana, 108; Pelargonium, colours in, 442; hybrid, 442; Polyanthus and Daisy, abnormal, 334; Polyanthus, hose-in-hose, 274; Polypodium sp., galls on, from the Gold Coast, 77; Primula conspersa, 427; Primula, malformation in, 242; Rosa canina with green petals, 442; Saxifrage, rust disease of, 442; Scilla campanulata, 334; Seedlings, variations in, 173; Smilax with curled leaves and variegation, 142; Stock, fasciated, 242; Thuya, gall on root of, 46; Trollius, grubs on roots of, 142; Viola with fringed foliage, 442; Violet with laciniate leaves, 427; Willow buds, grouse eating, 426.
Scotland, effects of the weather in, 171; flowers in the south-west of, 339; notes from, 13, 45, 58, 99, 142, 173, 339, 372; weather in, 99
Seed crop prospects in California, 347
Seed industry, the, 293
Seedlings, coniferous, damping off of, 186
Seed testing, 187
Seed testing station at Edinburgh, 45; in Ireland, 330; in Scotland, 372; proposed national, 306
Sea coast, grasses and trees for, 376
Seeds and plants collected for the U.S.A. Department of Agriculture, 348
Seeds and seedlings, coniferous, 187
Seeds, length of life of, 423; sterilisation of, 121, 172
Seedsmen at cricket, 439
Self versus cross fertilisation, 154
Selkirk public park, gift to a, 45
Senecio Ghiesbreghtii, 188, 210
Septoria Petroselini var. Apii and its prevention, 414
Sequoias of California, the, 9
Sexual characters, development and inheritance of, 174
Seymour, Mr. E. J., 230
Shanghai, a flower show at, 435
Shetland, school gardens in, 13
Shrubs and trees, Austro-Hungarian, handbook on, 402
Shrubs, the mild weather and its influence on, 100
Siddall, Mr. J. D., new appointment of, 21
Silver-leaf disease, 176, 388
Smallholdings, 347; and allotments, 188
Small, Mr. William, appointment of, 237
Smith, Mr. A. C., appointment of, 385; presentations to, 404
Snails, camphor for, 385
Snell, Mr. J., appointment of, 237

Societies:—Bath Gardeners', 175, 194; Birmingham and District Gardeners', 194, 211, 243; Birmingham Botanical and Hort., 230, 443; Brighton, Hove and Sussex Hort., 77; Bristol and District Gardeners', 47, 127, 144, 175, 194; British Gardeners', 142, 174, 237; (Annual Meeting), 334; (Edinburgh Branch), 77, 211, 375; (Kew and District Branch), 243; Broughty Ferry Hort., 243, 375; Cardiff Gardeners', 47, 127, 194, 243; Chelmsford and District Gardeners', 14, 144, 175; Chester Paxton, 127, 142, 175, 194; City of London Rose, 31, 370; Cornwall Daffodil and Spring Flower, 261; Coventry Chrysanthemum, 79; Croydon and District Gardeners', 127; Debating, 15, 47, 127, 144, 175, 194, 211, 243, 359, 375; Dumfries & District Hort., 142; Dumfries and Galloway Gardeners', 47, 127, 194, 211, 243; Dumfries Horticultural, 99; Drumlanrig Castle Gardens, 243; Dumfriesshire and Galloway Gardeners', 15; Edinburgh Botanical, 62, 142, 226, 316, 409; Edinburgh Garden and Nursery Workers' Union, 211; Edinburgh Nurserymen, Gardeners' and Florists' Association, 142; Edinburgh Royal Botanic Garden Guild, 347, 409; Educational Colonies Association, 121; Elstree and Boreham Wood Hort., 194; Finchley Chrysanthemum, 194; Forest Gate Chrysanthemum, 111; Gardeners' Royal Benevolent Institution, 25; (Worcester Auxiliary), 41; General Bulb Growers', (Haarlem), 392; Ghent Hort., 410; Glasgow Fruit Trade Benevolent, 46; Glasgow Seed Trade, 14; Haddo House, 14; Horticultural Club, 46, 173, 206, 243, 373, 403, 427, 442; (Annual Meet.), 108; Imperial Business, 440; Irish Gardeners' Association & Benevolent, 261; Italian Hort., 237; Kent, Surrey and Sussex Daffodil, 277; Kilmarnock & District Gardeners', 144, 194; Leeds Gardeners' Benefit, 174; Linnean, 14, 63, 174, 335, 404, 409; (Anniversary Meeting), 392; Liverpool Hort., 77, 242; Loughborough and District Gardeners', 127; Manchester and North of England Orchid, 14, 46, 94, 127, 159, 193, 242, 315, 359, 392; Manchester Royal Botanical and Hort., 311; Midland Daffodil, 277; Midland Re-afforesting Association, 237, 311; National Auricula and Primula (Midland Section), 334 (Southern Section), 317; Nat. Chrysanthemum (Annual General Meeting), 109; Nat. Gladiolus, 404, 443; Nat. Rose, 270, 316; Nat. Tulip, 374, 388; Northern Seeds and Roots Association, 13; North of England Hort., 120, 194; (Annual Meeting), 159; Norwich Hort., 277; Nursery and Seed Trade, 242; Nurserymen, Market Gardeners' and General Hailstorm Insurance Corporation, Ltd., 261; Perpetual-flowering Carnation, 25, 46, 30, 169, 260, 330; Reading Gardeners', 127, 175; Royal, 174, 329; Royal Caledonian Hort., 46, 243, 260, Royal Counties Agri., 410; Royal Hort., 29, 60, 77, 91, 104, 105, 125, 142, 153, 157, 173, 191, 211, 224, 242, 256, 274, 299, 314, 332, 372, 388, 403, 425; (Council Report), 93; (Annual Meeting), 107; (Chelsea Show), 346, 349; R.H.S. Gardens Club, 137, 347, 424; Royal Hort. of Ireland, 261; Royal Meteorological, 105, 142, 193, 277, 374; Royal Scottish Arboricultural, 126; (Aberdeen Branch), 374; Ruddington Gardeners', 127; Scottish Fruit Trade, 194; Scottish Hort., 46, 62, 89, 111, 153, 174, 242, 316, 335, 409; Shropshire Hort., 41, 335; Société d'Agriculture et de Botanique de Gand, 294, 313; Société Française d'Horticulture de Londres, 276; Southampton and District Gardeners', 243; Southampton Royal Hort., 109; Stevenage and District Hort., 194; Stirling and District Hort., 194; Stirling Chrysanthemum, 62; Surveyors'

Institution, 120; United Horticultural Benefit and Provident, 63, 144, 194, 277; (Annual Meeting), 316; Uppsala Hort., 253; Vienna Hort., 106; Wargrave and District Gardeners', 175, 211; Watford Hort., 15, 47, 359; Woodbridge Hort., 109; Yorkshire Gala, 429
Society, Daffodil, a proposed national, 13; damages against a horticultural, 272; new Dumfries horticultural, 99; suspension of the Haddo House, 14
Societies, the formation of federal, 142
Soil, effects of a changed, 273; chemistry in the, 253; partial sterilisation of, by lime, 9; sterilising, 9, 96, 287, 313; the chemistry of steam-sterilised, 329; the loss of nitrates from, 57
Solanum Capsicastrum "Melvinii," 101
Sophora (Edwardsia) grandiflora, 21
South Africa, a national botanic garden for, 404; Broncho grass in, 121; notes from, 165, 419; report of Agricultural Department of, 165
South African Combretaceæ, the, 52, 67, 116, 140, 147, 164, 181, 201, 231
South America, Apples for, 121
South-Eastern Agricultural College, 106
South Kensington, lectures at, 423
South, Mr. F. W., appointment of, 311
South-west, spring flowers in the, 339
Smoke, town, and plant growth, 329
Species, elementary, 42
Speed, Mr. Walter, 76
Spraying trials at Wisley, 274
Spring flowers in the south-west, 339
Spruce, aphis on, 287
Statices, the propagation of, 19
Steam-sterilised soils, the chemistry of, 329
Sterilising soil, 9, 96, 287, 313
Stinging nettles, the destruction of, 169
Stone, chipped, mulching with, 394
Storage, cold, of Apples and Peaches, 236
Straffan House Gardens, Polygonum polystachyum in, 329
Streak; a bacterial disease of the Sweet Pea and Clovers, 215
Suburban garden, the, 24
Suffragettes at Kew, 153
Sugar Beet, 137
Sulphate of copper, impure, 385
Sulphur, as an "artificial manure," 188; for Chrysanthemums, 223, 240, 272, 312
Sundries, R.H.S. trials of, 169
Sunflower, the red, 285
Sunshine recorders, 306
Sweet Pea, streak disease of, 215; crossing Lathyrus luteus with the, 173; history of the, 40
Sweet Peas, 85; detection of rogues in, 155; development of, 113; planting of, 248; sowing, 99; trials of, at Reading, '57; winter-flowering, 113
Swiss horticultural exhibition, 423
Swiss mountain garden, Alpine plants, in a, 272
Sycamore, a precocious, 59

T

Tarouca, Ernst Graf Silva (*Unsere Frieland Laubgehölze*), 402
Tarring a pergola, 16
Taylor, Mr. H. V., appointment of, 237
Tea industry, lecture on the, 89
Tellier, Mr. Charles, 222
Tennis ground, management of a, 163; dimensions of a, 175
Tepary, the value of, 25
Teucrium hircanicum, 387
Terminological exactitude, on, 386
The Dell, Englefield Green, Orchids at, 283
Thompson, H. Stuart (*Sub-Alpine Plants or Flowers of the Swiss Woods and Meadows*), 147
Thuja Craigana, 325
Tillage, the use of high explosives in, 404
Timber and Forest products, research work in, 168
Timber, brown and green Oak, 171, 209; English, some uses of, 399; prices of home-grown, 141; of the Lebanon Cedar, 239
Times Irish number, the, 205
Tomato culture, 398
Tomato Italia, 423
Town planning scheme and Kew Gardens, 205
Town smoke and plant growth, 329
Traces of bygone civilisation, the last, 88
Trade note, 243, 360, 410
Train, egg, in North Wales, 253
Transvaal Perpetual-flowering Carnations in the, 419
Travelling greenhouses, Mr. Pullen-Burry on, 427, 442
Trees, and grasses for the sea coast 376; and shrubs, 4, 21, 100, 165, 199, 225, 264, 397, 419; Austro-Hungarian handbook on, 402; effect of grass on, 238; felling and pruning of, 207; of California, the big, 9; planting, soil-blasting for, 341
Trevethan House, incendiarism at, 205
Trinidad Botanic Garden, 370
Tuberoses, 320
Tulip show, the National, 407
Tulips, at Breslau, 423; branching, 371; the origin of cultivated, 58
Turner, Mr. A., the appointment of, 254

U

Ulex europæus var. flore pleno, 304
Ulmus campestris, branches of, dropping, 386
U.S.A. Department of Agriculture, seeds and plants collected for the, 348

V

Valerianella olitoria (Corn salad), 201
Vallota purpurea, the culture of, 376
Vanilla cultivation in St. Vincent, 370
Vanilla pods, faking, 189
Vanillin, artificial, 121
Vaughan, Mr. J. C., 439
Vegetable oils, 122
"Vegetable Teratology," interesting letter by Dr. Masters on, 439
Vegetables, notes on, 365
Veitch Memorial Trustees, awards by the, 57
Veitch, Sir Harry, French honour for, 88
Ventilation, 216
Veronica Traversii, 172, 210
Vienna, gardening conferences in, 271
Vine louse, the, 161
Viner, Mr. E., testimonial to, 272
Vinery, mishaps in the, 245
Vines, bleeding in, 32; mealy bug on, 128
Violas, 325
Voles, Holly trees injured by, 172, 190; methods of destroying, 96
Vries, Professor Hugo de, honour for, 222

W

Wallflower, malformation in, 394
Walnut, the, 387
Warren House, Stanmore, Orchids at the, 99
Wart disease and deep cultivation, 254
Wasted energy, 206
Waterer & Sons' exhibition of Rhododendrons, 372
Watering, hints on, 285
Water, the loss of, by young and old leaves, 88
Watson, Mr. Gilbert, appointment of, 187
Weather, effects of the, in Scotland, 99, 171; mild, and its influence on shrubs, 100
Weathers, John (*Commercial Gardening*), 248
Webb, Mr. E., the late, 343; bequest by, 293
Welshpool, effects of the weather at, 222
West Indies, notes from, 406
West, Mr. G., 360
West of Scotland Agricultural College, Glasgow, 45
Wheat experiments, 13
White, Gilbert, lecture on, 373
Wilks, Rev. W., and his new residence, 34; testimonial to, 73
Will, belated discovery of a gardener's, 439
Williams, Mr. G. E., appointment of, 187
Williamson, Wm. (*Smallholders' Handbook*), 90
Willows for basket making, 286
Wilson, Dr. Woodrow, the programme of, 169
Wilton House, Salisbury, the Cedars at, 271
Winter, the abnormal, 106
Wisley, spraying trials at, 274
Witloof chicory, the cultivation of, in Belgium, 405, 406
Women's agricultural congress, 404
Wood, Prof. T. B. (*The Story of a Loaf of Bread*), 310
Wood, ripened, 124
Woodward, Robert, junr. (*The Planters' Notebook*), 26
Worshipful Company of Gardeners, the, 168

Y

Year-books and diaries of 1913, 41
Yellowing in plants due to an excess of lime, 422
Yew-woods and Beech-woods on the chalk, 172, 364
Yorkshire gardeners, retirement of two, 209, 240
Young, Mr. Thomas, presentation to, 106

Z

Zephyranthes, the, 141

SUPPLEMENTARY ILLUSTRATIONS.

*Allamanda Hendersonii, a flowering shoot of (January 11)
*Anemone pulsatilla rosea "Mrs. Van Der Elst" (January 25)
*Bougainvillea Sanderiana (March 29)
*Brown Tail Moth (Euproctis chrysorrhœa) (March 1)
Cliveden, Buckinghamshire, the summerhouse at (February 1)
*Dahlias Cardinal, Goldfinch, Mrs. Joynson Hicks and Modesty (April 12)
*Dianthus furcatus and D. frigidus in the Pont de Nant Alpine Garden (April 19)
*Gipsy Moth, the (Liparis dispar) (April 26)
*Ipomæa rubro-cærulea (February 15)
*Iris trojana (March 15)
Kearsney Court, Dover (June 28)
*Nun Moth, the (Liparis monacha) (June 7)
*Nymphæa gigantea var. Hudsoniana (June 21)
Polygonum polystachyum in Straffan House Gardens, Co. Kildare (May 17)
Pont de Nant Alpine Garden, Switzerland, views in the (January 18)
*Pont de Nant Alpine Garden, Switzerland, plants growing in the (March 8)
Rockery of succulents at La Mortola, Ventimiglia, Italy (May 31)
*Rhodochiton volubile (May 10)
*Sir Trevor Lawrence, Bart., portrait of (April 5)

* *Coloured Plates.*

(*For List of General Illustrations in the text see next page.*)

LIST OF ILLUSTRATIONS.

A

Acantholimon venustum in Jaysinia Botanic Garden, 138
Æthionema coridifolium in the Pont de Nant Alpine garden, Switzerland, 42
Agave Leopoldii, inflorescence of, 11; the ornamental foliage of, 10
Alpines in the rockery, Pont de Nant, Switzerland, 272
Alyssum alpestre in a Swiss Alpine garden, 52
Amaryllis Belladonna blanda, 441
Ananas sativus variegata in the Riverview Nurseries, U.S.A., 182
Androsace glacialis, 187; A. primuloides, 187; A. tibetica, 362
Anemone narcissiflora in a Swiss Alpine garden, 57
Angræcum Andersonii, 146
Apple Present van Engeland, 325
Arenaria purpurascens in a Swiss Alpine garden, 43
Avebury, Lord, the late, portrait of, 375
Azaleas at the Ghent Exhibition, 307

B

Bacillus lathyri causing streak disease in Sweet Pea and Clover, 215, 216
Bauhinia variegata flowering in Manik Bagh, Indore, 379
Begonia "Julius," in a hanging basket, 75
Belvoir Park, Belfast, views in, 147, 148
Black Knot disease (Plowrightia morbosa), 340
Blakeney Point, Norfolk, views at, 97, 98
Brachychilus Horsfieldii, fruiting shoot of, 12
Burford Lodge, Dorking, views at, 221, 223, 224

C

Callier, M. Alexis, portrait of, 290
Campanula spicata, 207; C. Stevenii nana, 342; C. thyrsoides, 206
Carnation propagating house, 107
Cattleya Trianæ alba "Souvenir de Louis Verdonck," 199
Celery "blight" or "rust," 415
Chatsworth, the gardener's house at, 439.
Chelsea show, exhibits at the, 347, 348, 351, 356
Chicory, Witloof, Belgian methods of forcing, 405, 406
China, views by the Han river in, 129, 130
Chrysanthemum Mrs. R. Luxford, 5; C. "William Turner," 4
Clematis Armandii, 322
Cliveden, Buckinghamshire, views in the gardens at, 65, 66, 67, 82, 83, 84
Clover attacked by streak disease, 216
Conservatory in Messrs. Wm. Bull and Sons' Nursery, 303
Cratægus Geneseensis, 115
Crump, Mr. William, portrait of, 76
Cypripedium Demeter, 3; C. "Roundhead," 230

D

De Cock, M. Lucien, portrait of, 290
Dianthus alpinus, 248; D. cæsius, 254; D. gelidus, 247; D. glacialis, 256; D. neglectus, 255
Divers, Mr. W. H., portrait of, 108
Douglasia lævigata, 381
Dracæna Massangeana in the Riverview Nurseries, U.S.A., 182
Dreer's, Messrs. Henry A., nurseries, Philadelphia, U.S.A., 180, 181, 182
Dunn, Mr. J., portrait of, 6

E

Echium Bourgeauanum, 25; E. Pininana and E. simplex in a Teneriffe garden, 20; E. simplex, 18; E. hybrid (E. candicans × E. simplex), 19.
Erinus alpinus in the Val de Nant Botanic Garden, Switzerland, 58
Eriobotrya japonica variegata, 293
Eryngium alpinum in Jaysinia Botanic Garden, 139

F

Ferns, group of, exhibited by Messrs. Bier and Ankersmit at the Ghent Exhibition, 331
Flower beds for planting with different colours, plan of, 320
Flowering plants exhibited at the Chelsea Show, 371

G

Garden, a formal, at the Chelsea Show, 347
Gardener's house at Chatsworth, The, 439.
Genista horrida growing in Jaysinia Botanic garden, 140
Ghent International Exhibition, views at the, 286, 291, 293, 295, 296, 304, 305, 307, 312, 331
Glasshouses, movable, 241
Goodacre, Mr. B., portrait of, 7
Goodacre, Mr. J. H., portrait of, 76
Gregynog, Montgomeryshire, view in the gardens at, 233

H

Harris, Mr. Edward, portrait of, 6
Helichrysum bellidipides, 266, 436
Henry, Mr. Augustine, portrait of, 163
Hooker, Sir Joseph, the Kew memorial to, 171
Hornbeam in the Manor House Park, Windover, 397
Hydrangeas at the Ghent Exhibition, 305

I

Iris iberica var. ochracea, 399

J

Jaysinia Botanic Garden, plants growing in, 13, 140; view of the Giffre Valley from, 122
Jennings, Mr. F., portrait of, 7

K

Kew memorial to Sir Joseph Hooker, 171
King, Mr. David, portrait of, 89

L

Lawrence, Sir Trevor, handing to the Rev. W. Wilks the Victoria Medal of Honour, 109
Le Floriste François, frontispiece of, 37
Ligustrum japonicum coriaceum, 265.
Lilium regale, 416; a field of, in America, 417
Limonia Poggei var. latialata, 378
Lindenbergia grandiflora, 27, 28
Loiseleuria procumbens, 343

M

Matthiola pedemontana in the Pont de Nant Botanic Garden, Switzerland, 149
Mazus rugosus, 210
Meconopsis Wallichii in Belvoir Park Gardens, Belfast, 147
Megaclinium triste, 131
Methven, John, portrait of the late, 375
Mice, device for trapping, 79

N

Narcissi: Evangeline, 330; St. Olaf, 329; White Emperor, 239.

O

Odontioda Madeline var. Prince of Orange, 92
Odontoglossum eximium Armstrongiæ, 350; O. e. "Warnham Court variety," 246; O. Pescatorei "Lady Holford," 283
Odontonia Lælia Sander, 349
Œnothera rubicalyx, 165
Oleária Chathamica, 363
Omphalodes cornifolia, 380
Orchids, an exhibit of, 385
Oxlip, fasciated, 323

P

Pæonia Delavayi, 403; P. La Lorraine, 296; P. L'Espérance, 424
Papaver orientale, abnormal bloom of, 338
Perry, Amos, portrait of the late, 410
Phœnix Roebelinii, the cultivation of, in the Riverview Nurseries, U.S.A., 182
Phylloxera vastatrix (Vine louse), 161
Plowrightia morbosa (Black Knot disease), 340
Pont de Nant Alpine garden, Switzerland, plants growing in the, 52, 53, 57, 58, 59
Populus Maximowiczii, 198
Populus suaveolens, 198
Potato moth, the, 284
Primrose, fasciated oxlip, 323
Primula Allionii growing on the Maritime Alps, 85; P. Fortunei, 238; P "Jean Douglas," 267; P. Listeri, 271; P. Maximowiczii, 267; P. pseudo-denticulata, 264; P. Purdomii, 200
Prunus cerasifera, the semi double-pink variety of, 190
Prunus subhirtella, 285

R

Ranunculus glacialis growing on the Gruben Alps in the Valais, 117
Rhododendron concinnum, 341; R. dauricum on the rockery, Kew Gardens, 51
Rhododendrons at the Ghent Exhibition, 312
Rockery, an ideal, details in the construction of, 133, 153, 178
Rock garden exhibited by Mr. J. Wood at the Chelsea Show, 356
Roses: Ellen Poulsen, 302; Irish Fireflame, 365; Mrs. Charles Russell, 61
Roses, details of the work of budding, 379

S

San José scale (Aspidiotus perniciosus), 69
Saxifraga "Faldonside," 214; S. longifolia, 390; S. pyramidalis in Sir Everard Hambro's collection, 389
Septoria Petroselini var. Apii, a disease of Celery, 415
Shanghai Flower Show, "cherry blossom" dance at a, 435
Socratea Forgetiana exhibited at the Ghent International Show, 286
Solanum capsicastrum "Melvinii," 101
Späth, Franz Ludwig, portrait of the late, 319
Speed, Mr. Walter, portrait of, 76
Stove foliage plants exhibited at the Ghent Exhibition, 304
Streak disease in Sweet Pea and Clover, 215, 216
Sunken garden exhibited at the Chelsea show, 351
Sweet Pea affected with streak disease caused by Bacillus lathyri, 215
Sweet Pea foliage, types of, 155
Sweet Pea, the first illustration of the, 40

T

Tennis court, dimensions of a, 175
Thermosiphon or heated frame for forcing Chicory, 406
Trevesia Sanderi at the Ghent Exhibition, 295

V

Veronica Traversii in Kilkerran Gardens, 172
Vine louse (Phylloxera vastatrix), 161
Viola gracilis var. Valderia in the Pont de Nant Alpine garden, Switzerland, 53

W

Wahlenbergia (Edraianthus) pumilio growing in Val de Nant Botanic Garden, 59
Webb, Edward, portrait of the late, 94
Weevils, vine, 320
White, Mr W. H., portrait of, 7
Whitton, Mr. James, portrait of, 108
Whytock, Mr. James, portrait of, 6
Wilks, Rev. W., at work in his new garden, 34; in his study, 35
Wistaria exhibited by Messrs. Pipers, 353

Y

Yunnan, Western, views in, 129, 130



THE
Gardeners' Chronicle

No. 1,358.—SATURDAY, January 4, 1913.

CONTENTS.

Agave Leopoldii	11	Orchid notes and gleanings—	
Agricultural Holdings Act	9	Cypripedium Demeter	3
Books, notices of—		Peas, late	13
Journal of the R.H.S. Gardens Club	9	Phosphorescent plants	8
Publications received	10	Pitcher plants, parasites of	10
Brachychilus Horsfieldii	12	R.H.S. trials	13
Bulb garden, the—		Rosary, the—	
The forcing of bulbous plants	10	Cultural hints for January	12
Candid opinion, a	13	Scotland, notes from	13
Chrysanthemums, late-flowering	4	Societies—	
Daffodil society, need for a national	13	Chelmsford & District Gardeners'	14
Hedera, new species of	9	Glasgow Seed Trade	14
Honours list, the	9	Horticultural Club	9
Hooker, Sir Joseph	5	Linnean	14
Husbandry, progress of	14	Manchester and North of England Orchid	14
I'Anson, Mr. G., presentation to	9	Royal Horticultural	9
Kemp, Mr. George	9	Society, suspension of a horticultural	14
Kew notes—		Soil, partial sterilisation of, by lime	9
Plants in flower at Christmas	3	Trees and shrubs—	
Lilies in 1912	1	Hamamelis	4
Nature reserves	8	Trees, big, of California	9
Nomenclature of hybrid Orchids	13	Week's work, the—	
Nursery employés dinner	9	Flower garden, the	6
Obituary—		Fruits under glass	6
Bruckhout, Dr.	14	Hardy fruit garden	7
Hart, Walter	14	Kitchen garden, the	6
Husbands, Isaac	14	Orchid houses, the	7
McGregor, John	14	Plants under glass	7
Whitelaw, William	14	Wheat experiments	13
Orchid novelties of 1912	2	Wood, ripened	13
		World's crops, the	9

ILLUSTRATIONS.

Agave Leopoldii	10, 11
Brachychilus Horsfieldii, fruiting shoot of	12
Chrysanthemum "Mrs. R. Luxford"	5
Chrysanthemum "William Turner"	4
Cypripedium Demeter	3
Dunn, Mr. John, portrait of	6
Goodacre, Mr. B., portrait of	7
Harriss, Mr. E., portrait of	6
Jennings, Mr. F., portrait of	7
White, Mr. W. H., portrait of	7
Whytock, Mr. James, portrait of	6

LILIES IN 1912.

FEW gardeners will feel even a pang of regret at the passing of 1912, and a good many will probably murmur a prayer that they may never see the like of it again.

Though it seemed to have rained almost every day, at any rate during a considerable part of the year, the people whose business it is to prepare the statistics tell us that the rainfall of 1912 was not excessive, and one is in duty bound to believe them. There can be no doubt, however, that the sun was remarkably sparing of his favours, and as sunshine is one of the few things for which even the wealthiest gardener cannot find an effective substitute, one is not altogether surprised that on the whole 1912 proved but an indifferent year for Lilies.

It would doubtless have been a great deal worse but for the exceptional roasting and ripening process all bulbs underwent in 1911, an experience which must have helped to carry them through the most dismal season of recent times. A wet winter coming on the heels of a cold and cheerless summer bodes ill for all the more difficult species, and if the present winter continues in the way it has begun, there will be many blanks in the Lily beds next summer, unless care has been taken to ensure quick and certain drainage.

The outstanding feature of last year in the Lily garden was undoubtedly the wonderful progress of that fine plant, which, while waiting apparently for identification, has had the name of another Lily bestowed upon it, to wit, L. myriophyllum (of Wilson) (see *Gard. Chron.*, April 27, 1912, figs. 126 and 127). As a rule, the more beautiful of the genus, such as L. auratum, L. japonicum, L. Leichtlinii, and L. Washingtonianum, are at the same time the most difficult to raise and keep, but here we have a Lily of exceptional beauty by no means troublesome to manage and propagate. Even in the past year of sodden earth and sunless skies this magnificent Western Chinese plant not only bloomed remarkably well but ripened a bumper crop of seed into the bargain.

Though cocksureness and gardening seldom go hand-in-hand for any length of time, one has now had the so-called L. myriophyllum under observation long enough to hazard the opinion that it thrives less well in peat than in loam, and perhaps rather better in soil containing a fair proportion of lime than in that which has none. For the rest, this Lily does not seem particularly exacting in its requirements, though, of course, that is not to say that the bulb may be dropped into any hole the gardener may choose to dig for it.

L. Sargentiæ, another remarkable Chinese Lily, which has been masquerading for many years as L. Brownii leucanthum, has also done splendidly, though seemingly not so robust in constitution as L. myriophyllum, to which, if appearances go for aught, it must surely be akin. L. Sargentiæ grows well in a strong loam, containing rather more than an average proportion of lime, but gradually dwindles away to eternal rest when planted in peaty soils.

Lilies of the very late-flowering section seem, on the whole, to have had an indifferent time last year, but that was only natural, for neither L. sulphureum nor any of the forms of L. auratum, L. speciosum, or L. tigrinum can be expected to do themselves justice out-of-doors when the sun is in an almost persistently churlish mood. The actual growth of the plants seemed as fine as usual, but, generally speaking, the flower-buds did not open properly, and where they did the blooms were quite commonly blemished,

The early Lilies did extraordinarily well; the sun was kind enough to most of them, and after a very wet early spring, a six weeks drought in April and May did them no harm at all.

The effects on gardens of the roasting heat of 1911 have been apparent in many directions, and in none more than in the curious way the usual flowering sequence of the June Lilies was altered. For once in a way L. rubellum, deluded perhaps by the tropical heat of 1911 into believing itself at home in Japan, where it is the first Lily to bloom, was among the very earliest to make its début, opening while L. Hansonii, usually in flower long before L. rubellum, was still tight in the bud.

Midsummer Lilies did not fare so well, for by the beginning of July Nature was giving us a foretaste of the chilly weather she had bottled up for us in her vast cold store, and the result was enough temporarily to depress the most philosophic gardener.

In stature and growth L. Parryi, queen of them all, was as fine as ever, but as it happened, the sun was altogether lost to our corner of the world for some weeks at the time this and other Lilies were blooming, and one could not expect Californian plants to give us of their best in such unfavourable circumstances.

Of absolute strangers 1911 has introduced us to one in the fine Western Chinese Lily, exhibited by Miss Willmott at the Holland House Show under the provisional name of L. warleyense. E. H. Wilson, to whom the discovery of this Lily is due, considers it a good species, and it is unquestionably a splendid acquisition. Flowering specimens of a Lily, to which the name L. lophophorum was attached, were exhibited at one of the R.H.S. shows in the summer; the Lily had doubtless been given this name under a misapprehension, for it was obviously one of the large pseudo-tigrinum section of which the so-called L. sutchuenense (of Wilson) is the principal representative, and has nothing in common with L. lophophorum (Franchet); the latter is more correctly known as Fritillaria lophophora.

An unusually light-coloured form of one of the early cup Lilies made a welcome appearance at Vincent Square towards the end of May, and was christened L. davuricum var. luteum.

Beyond the above-mentioned Lilies nothing at all novel seems to have made a public appearance during the year, but L. occidentale (Purdy)—to all intents and purposes new to gardens—has flowered and proved of great interest horticulturally as well as botanically; bulbs received from Kiao-Chow of a Lily it was hoped might correspond to the figure of L. medeoloides in Elwes's *Monograph*, turned out to be L. concolor of exceptionally rich colouring.

A fine little colony of L. polyphyllum has come into its own at last, after stretching one's patience almost to breaking point, and a most beautiful deep-yellow-flowered Lily, typical rather more of L. pardalinum than of L. Parryi, yet with some of the characteristics of the latter species, has made an appearance in a bed of home-raised L. Parryi seedlings. One thinks naturally, though quite possibly without good reason, of the long-lost and almost mythical L. Warei, reputed to be a transitional form between the two Lilies, but few people have ever set eyes on the plant.

L. Bolanderi and L. Kelloggii, though nearly drowned, are now quite at home, and, after many years absence, L. Alexandræ, a beauty hailing from the island of Oshima, in the southern sea of Japan, and reputed to have mixed blood in its veins, has made a welcome re-appearance.

L. medeoloides, too, an old Japanese Lily, was in flower 16 days earlier than in any of the last eight seasons; this little treasure deserves to be better known, for, while not difficult to grow, it is distinct and beautiful enough to hold its own in any company; patience one must have

with it, for the odd, little, oat-scaled bulb grows but slowly in our chilly climate, and in common with Omphalodes Luciliæ, is held in high favour by enterprising members of the slug family.

L. Delavayi has turned up again, this time at the Botanic Gardens at Edinburgh, and a renewal of one's acquaintance with it only serves to deepen the feeling of regret that Franchet should have chosen so uninteresting a plant with which to perpetuate the name of the most assiduous collector of Chinese Lilies of modern times.

L. Duchartrei is in cultivation once more, and L. yunnanense as well, while on the last day of the old year bulbs were received from Mr. E. H. Wilson of two species of Lilium from Korea.

For gardening folk in general, and growers of Lilies in particular, there could be no greater contrast than the seasons of 1911 and 1912, and while, no doubt, abnormal in themselves, they furnish apt illustrations of the difficulties the amateur has sometimes to contend with, for it is the abnormal season that punishes the gardener who is not prepared for contingencies; in 1911 the long, scorching drought made cemeteries of many colonies of Lilies in gardens where water was not available; 1912, on the other hand, must have brought home to scores of people the paramount importance of sharp drainage.

The moral is writ large for those with eyes to see it; it is that to succeed with Lilies in general one must be prepared for the abnormal season, be it blistering hot or soaking wet; then, if the soil is right and the bulbs are sound to start with, almost the only uncertain element, except perhaps a record frost, will be the sun; he may fail us as he failed us in 1912, but if he should, the effect will be but transient, and while of necessity there must be a proportion of deaths, one will not have to mourn the loss of a tithe of the treasures that go to their doom when the gardener is caught napping. *A. Grove, Kentons, near Henley-on-Thames.*

NOVELTIES OF 1912.

ORCHIDS.

IN the past year many charming additions to garden Orchids have been forthcoming from the collections of those who make the raising of seedlings their chief consideration. Evidence of this fact is furnished by the records of the Awards made by the Orchid Committee of the Royal Horticultural Society, the number, including the Awards made at the Great International Exhibition, being 158. Many of the choicer novelties have been illustrated in the *Gardeners' Chronicle*, and coloured paintings with the full records of each plant have been added to the Royal Horticultural Society's invaluable collection of Orchid paintings, which now numbers nearly 2,000.

Lt.-Col. Sir GEORGE L. HOLFORD, K.C.V.O., and his Orchid grower, Mr. H. G. Alexander, sustain their rôle of champions amongst the amateur cultivators, the Westonbirt awards of the year including 14 First-class Certificates and 13 Awards of Merit. The individual plants shown in the superb groups staged by Mr. Alexander merit the highest praise, not only for artistic arrangement but also for the wonderful show of flowers borne by each specimen in proportion to the size of the plant. Among those for which Mr. Alexander received Cultural Commendations were the grand specimen of the scarlet Sophronitis with 100 flowers (March 19); the fine mass of pure-white Miltonia vexillaria "Snowflake" (June 4); and Cattleya Tacitus and C. Euphrasia, with 10 flowers on a spike, both exhibited in August. C. Dirce magnifica, which won, in addition to the First-class Certificate, the cup offered for the best Cattleya at the International Exhibition; C. Mendelii "Queen Mary"; C. Artemis; C. Peetersii "Westonbirt variety," Odontoglossum Merlin (February 6); Lælio-Cattleya Lustre var. Lavingo, L.-C. glaucus, L.-C. Golden Oriole var. Ruby, Cypripedium Nora (January); C. Demeter (December 17); Brasso-Cattleya The King (International Show); the large, pure white Miltonia vexillaria "Snowflake," the pale yellow Dendrobium Dalhousianium luteum and the charming blue Vanda cœrulea "Lady Holford," which crowned the beautiful group of the species shown at the Orchid Show on November 5 and 6, all obtained First-class Certificates.

The Award of Merit plants from Westonbirt included the beautiful Cypripedium Muriel (November 5), C. Viking, C. Latona, Cattleya Dirce "Westonbirt variety," Odontoglossum His Majesty, Lælio-Cattleya Lustre var. Buddha, L.-C. Gladiator, L.-C. luminosa var. Mandarin, L.-C. Golden Fleece, L.-C. Golden Oriole "Holford's variety," Cattleya Fabia gloriosa, C. Sunset, C. Hardyana La Perle, and the pretty white C. Brenda.

Baron BRUNO SCHRÖDER, the Dell, Englefield Green (gr. Mr. J. E. Shill), well maintained the fame of The Dell collection by contributing some specially fine exhibits which gained First-class Certificates in all but two cases. They comprised Lælio-Cattleya Baroness Emma (a grand flower); L.-C. Bella alba, Lælia purpurata Schröderæ, a fine, white flower with delicate rose-coloured front to the lip; Cattleya Dupreana, C. labiata Opal, white and of fine shape; Brasso-Cattleya Digbyano-Mossiæ "The Dell variety," the best white form of this hybrid; Miltonia Bleuana Rising Sun, Cymbidium Pauwelsii "The Dell variety," and a fine white form of Calanthe Baron Schröder, providing a contrast to the large, dark-centred original form raised at The Dell. A noble specimen of Cypripedium W. R. Lee, with over 40 flowers, secured for Mr. Shill a Cultural Commendation.

Sir TREVOR LAWRENCE, Bart., K.C.V.O., Burford (gr. Mr. W. H. White), who possesses a large, varied, and well-cultivated collection, maintained in fine condition for many years, obtained First-class Certificates for Lælio-Cattleya Trimyra, a charming yellow flower; and Odontoglossum Uro-Skinneri "Burford variety," which has a very large labellum densely spotted with purplish-rose. Sir Trevor obtained Awards of Merit for Zygopetalum Mackayi Sanderianum, a variety with white instead of the typical blue lip; Miltonioda Harwoodii, and Cypripedium Eurybiades. Some fine specimens of good culture have also been shown from Burford, Mr. White having secured Cultural Commendations for Cypripedium W. R. Lee and Platyclinis uncata, this latter plant bearing over 60 flower spikes. A Botanical Certificate was received for Eria rhyncostyloides.

J. GURNEY FOWLER, Esq., Glebelands, South Woodford (gr. Mr. J. Davis), whose plants thrive and flower admirably, although they are cultivated but a short distance from the City, secured First-class Certificates for the beautiful Odontoglossum crispum Saga, the superb Odontioda Latona "Fowler's variety," Cattleya Schröderæ Glebelands, and Cymbidium Woodhamsianum "Fowler's variety." Awards of Merit were obtained for Odontoglossum Memoria Lily Neumann, O. Jasper "Fowler's variety," Odontioda Devossiana "Fowler's variety," the white Cattleya Mendelii Thule, Cypripedium Hera-Beeckmannii, C. Glebelands (a prominent object in his fine group at the Orchid Show, November 5); and Odontoglossum Jasper "Fowler's variety."

F. M. OGILVIE, Esq., The Shrubbery, Oxford (gr. Mr. Balmforth), at the last meeting in 1912 showed one of the finest Orchids of the year in his blood-red Sophro-Lælio-Cattleya Thisbe, which obtained a First-class Certificate, a similar award falling to his very distinct Odontioda Mrs. Ogilvie, a plant which was much admired in Mr. Ogilvie's splendid group at the International Exhibition, and to Cypripedium elatior "Shrubbery variety," whilst Odontoglossum ardentissimum Carmen, O. percultum King George, and the clear yellow Lælio-Cattleya Scylla won Awards of Merit.

FRANCIS WELLESLEY, Esq., Westfield, Woking (gr. Mr. Hopkins), who cultivates and exhibits his plants with rare skill, found his best novelties in Lælio-Cattleya Mrs. W. Hopkins and L.-C. Bertram, two fine hybrids of very rich colour. He also showed Cypripedium San-Actæus "Westfield variety" (January 9); and the very handsome C. Sir William Chance and Sophro-Cattleya westfieldensis (December 17). Awards of Merit were obtained in each instance.

Sir JEREMIAH COLMAN, Bart., Gatton Park (gr. Mr. Collier), from the many fine scarlet Odontiodas raised at Gatton secured Awards for O. Bradshawiæ gattoniensis (F.C.C.), O. B. Lady Colman, a very bright flower; the yellow Dendrobium Golden Ray, and Odontoglossum Queen of Gatton.

C. J. PHILLIPS, Esq., The Glebe, Sevenoaks (gr. Mr. Bucknell), who has only recently commenced showing specimens from his small but choice collection, secured a First-class Certificate for his fine, white-petalled Cattleya Dionysius, and Awards of Merit for Odontoglossum Thais "Glebe variety," Lælio-Cattleya Phœnix, and L.-C. St. Gothard "Glebe variety."

E. H. DAVIDSON, Esq., Orchid Dene, Twyford, who possesses a fine new block of Orchid houses in a good district, and a keen appreciation of good things, was successful during the year in obtaining a number of awards. His best

novelties were Odontoglossum Wood-roffeæ (F.C.C.), O. scintillans "Orchid Dene variety" (two handsome crosses from O. Rossii rubescens); O. eximium var. J. Lakin, large and finely-coloured; O. Helene and O. Empress Eugenie, two beautiful flowers; Lælio-Cattleya Bella "Orchid Dene variety" (F.C.C.), L.-C. Rubens The Kaiser, L.-C. amabile "Borlases variety," the pretty Odontioda Euterpe "Davidson's variety," and Sophro-Lælio-Cattleya Sandhage, a large and finely-coloured flower.

DE B. CRAWSHAY, Esq., Rosefield, Sevenoaks (gr. Mr. Stables), who has produced so many desirable novelties in Odontoglossums and Odontiodas, showed on April 16, a noble specimen of Odontoglossum Victor Hye de Crom, with a branched spike 6 feet high; an example that proved what good culture can do in developing the best characters of a plant. A Cultural Commendation was awarded. Of the other Odontoglossums shown O. Vulcan "Crawshay's variety" was a model flower. Cymbidium rosefieldiense also was specially good.

H. S. GOODSON, Esq., Fairlawn, Putney (gr. Mr. G. E. Day), is one of the most constant exhibitors before the Orchid Committee. His plants which obtained awards were Lælio-Cattleya Memoria H. A. Tracy (F.C.C.), a grand flower of fine form; Cattleya Tityus, also a model flower; Sophro-Lælio-Cattleya Menippe, of glowing red colour; Cattleya Hardyana Herbert Goodson, C. Maggie Raphael "Goodson's variety"; and Odontoglossum Lambeauianum Princess Mary.

WALTER COBB, Esq., Normanhurst, Rusper (gr. Mr. C. J. Salter), produced Odontoglossum crispum "Queen of the Morn," Odontioda Cooksoniæ "Cobb's variety," and Zygo-colax Charlesworthii "Cobb's variety."

His Grace the DUKE OF MARLBOROUGH (gr. Mr. Hunter), obtained awards for Cypripedium Cateline and C. Duke of Marlborough; J. S. MOSS, Esq., for Odontoglossum Jasper; SAMUEL GRATRIX, Esq., for O. crispum "Samuel Gratrix," a very finely-shaped, well blotched flower; W. WATERS BUTLER, Esq., for Lælio-Cattleya Ganymede; C. J. LUCAS, Esq., for L.-C. Apollo; F. DU CANE GODMAN, Esq., a First-class Certificate for L.-C. Godmanii; and W. R. LEE, Esq., a similar award for the stately Cypripedium Pallas Athene.

Awards of Merit were granted to the late J. S. BERGHEIM for Angræcum O'Brienianum; to E. R. ASHTON, Esq., for Brasso-Cattleya Madame Hye "Ashton's variety," and Cattleya Oberon; and to PANTIA RALLI, Esq., for C. Comet.

Before passing to consider the novelties contributed by members of the trade, it may be pointed out that amongst the best plants of the season exhibited by amateurs were the varieties of Vanda cœrulea contributed by Lady WERNHER (gr. Mr. Metcalfe), and the grand specimen of Angræcum sesquipedale, with over 20 flowers, shown by F. C. STOOP, Esq., Byfleet (gr. Mr. Carpenter). In both instances the grower was awarded a Cultural Commendation.

(To be continued.)

ORCHID NOTES AND GLEANINGS.

CYPRIPEDIUM DEMETER.

THIS fine Cypripedium (see fig. 1) which obtained a First-class Certificate at the meeting of the Royal Horticultural Society on December 17 when exhibited by Lieut.-Col. Sir George L. Holford, K.C.V.O. (gr. Mr. H. G. Alexander), presents specially interesting features, and plainly indicates the fact which is of importance to hybridists that certain well-marked species impart their good qualities to their descendants through many generations. In this hybrid the dominant features in the large yellow staminode, the broad petals and lip, which have a yellow ground tinged with reddish-purple, are derived from C. villosum almost unchanged, except in respect to size. Yet C. villosum was the remotest ancestor of C. Demeter, the result of crossing C. G. F. Moore (C. nitens × C. Mrs. W. Mostyn) and C. Earl of Tankerville (C. nitens × C. exul). Consequently the influence of C. villosum is derived from the cross, C. villosum × C. insigne, which resulted in the natural hybrid C. nitens. The predominance of C. villosum is also strengthened by the influence of C. Boxallii (which is the nearest species to C. villosum) in one of the parents of C. Mrs. W. Mostyn, the distribution of the purple spotting on the dorsal sepal following the lines of C. Leeanum, the other parent.



FIG. 1.—CYPRIPEDIUM DEMETER: PETALS AND LIP YELLOW, TINGED WITH PURPLE.

KEW NOTES.

PLANTS IN FLOWER AT CHRISTMAS.

THE unusually mild winter has been very favourable for subjects which flower out-of-doors during mid-winter. The following hardy shrubs and plants were in flower at Kew during Christmas week:—

SHRUBS.—Arbutus Andrachne, A. hybrida, A. Unedo (Strawberry Tree), A. U. var. magnifica, Berberis Aquifolium (Mahonia), B. japonica, Chimonanthus fragrans (Winter Sweet), C. f. var. grandiflorus, Cratægus monogyna var. præcox (Glastonbury Thorn), Cydonia japonica (Japanese Quince) in numerous varieties; C. Maulei, C. M. var. superba, Daphne oleoides, Erica carnea, E. c. var. alba, E. hybrida, E. lusitanica (syn. codonodes), E. mediterranea, E. m. var. alba, E. m. var. nana, E. Veitchii, Escallonia exoniensis, E. langleyensis, E. Philippiana, Hamamelis arborea (Witch Hazel), H. japonica var. Zuccariniana, H. mollis, H. nivalis, Jasminum nudiflorum "Winter Jessamine," J. Sieboldiana, Lonicera fragrans, L. Standishii and var. lancifolia, Polygala Chamæbuxus var. lutea and var. purpurea, Prunus Amygdalus var., P. Miqueliana, Rhododendron dahuricum and var. atrovirens, R. mucronulatum, R Nobleanum, R. parvifolium, Spiræa Thunbergii, Ulex europæus (Gorse), Veronica tobarcorensis, and Viburnum Tinus (Laurustinus).

HARDY PLANTS.—Adonis amurensis, Arabis albida, A. a. var. flore pleno, A. procurrens.

Cheiranthus Cheiri (Yellow Wallflower), Colchicum brachyphyllum, C. hydrophilum, C. libanoticum, Crocus lævigatus, C. sativus var. Cartwrightianus, C. Sieberi var. atticus, Cyclamen ibericum, Erysimum cheiranthoides, E. rupestre, Euphorbia biglandulosa, Galanthus cilicicus Helleborus abchasicus, H. corsicus, H. Kochii, H. niger (Christmas Rose), H. n var. maximum, H. odorus, Iberis sempervirens (Evergreen Candytuft), Iris alata, I. Histrio, I. sieheana, I. unguicularis, I. u. var. alba, Lithospermum prostratum, Othonnopsis cheirifolia, Potentilla splendens, Primula vulgaris, Sternbergia Fisheriana, Tussilago fragrans, Viola Munbyana, and Viola seedlings with white and yellow flowers. *K.*

LATE CHRYSANTHEMUMS.

THE demand for late Chrysanthemums is often greater than the supply. At the same time, growers who have plenty of glasshouses at their disposal need have no difficulty in maintaining a show of blooms till the middle or end of February.

During recent weeks I have read of the scarcity of late decorative Chrysanthemums, and this fact induced me to send to the Editors photographs (see figs. 2 and 3) of two plants that flowered in a cool Peach case. The plants received no special treatment; they were not finally housed till the first week in November. In neither instance were the plants stopped during the growing season, but allowed to break naturally. The variety William Turner (see fig. 2) was allowed to form crown buds, and the blooms averaged 6 inches across, there being about 12 blooms on each plant.

The other variety, Mrs. R. Luxford (fig. 3), has a more compact habit, and when grown for exhibition flowers early. But on bush plants grown naturally the blooms are much later, and, though the flowers were a little past their best condition in Christmas week, Mrs. R. Luxford is worth cultivating as a late variety. The plant was about 3½ feet high from the ground and the same measurement across. The flowers, which numbered more than 70, all of even size and colour, were developed as evenly over the plant as though the latter had been trained as a specimen. In this case terminal buds were selected, each shoot being disbudded to one flower.

Other varieties in bloom just now include Maud Jefferies, White and Yellow Victoria, Thompson, A. J. Balfour, True Gold, Allman's Yellow, Jack, Merstham Jewel, Herbert Williams, Kathleen May, Colonel H. E. Converse, J. W. Crossley, Winter Cheer and Heston White. The three varieties last-mentioned will still furnish good flowers for a month or five weeks.

I have for some time past advocated the growing of Chrysanthemums in a natural manner for cut bloom purposes, and I am more than ever convinced that for late flowers no system of stopping is equally satisfactory, as I have now practised it sufficiently long to prove that the results obtained are as good after a very wet season as a dry one.

The only variety that disappointed me this year was Thorp's Christmas Rose, and this was probably my own fault, as the plant grew so tall before making a break that I shortened it about 1 foot early in June. The result was a number of ill-ripened shoots which will not perfect their flowers.

Cuttings should be inserted during January and February and the plants treated as hardily as possible with proper regard to their preservation from frosts. Manures should never be given in excessive quantities nor until the plants have made considerable growth; indeed, the early varieties should almost be showing their flower-buds before stimulants are applied. When this stage is reached, the supply may be increased in all cases without causing ill-effects, but should again be lessened or stopped entirely directly the flowers exhibit colour.

The flowers produced under this treatment last for a long time, whilst the stems are long and rigid. The practice of stopping the plants two or three times during the early stages of growth does not give such good results, whilst the height of the plants is almost the same as those cultivated in a more natural manner. *Thomas Stevenson.*

TREES AND SHRUBS.

HAMAMELIS.

THE species of Hamamelis or "Witch Hazel" are perfectly hardy, so that in planting them no especial care is needful in selecting a spot, provided the soil is fairly good and not water-logged. Among hardy shrubs there are few more characteristic and attractive plants during the winter months. If the sprays are cut just as the earliest flowers are on the point of expanding they will open beautifully in water and form a very pretty and lasting feature in the house.

The following are the known species:—

H. ARBOREA.—This is the Japanese Witch Hazel. Like the other species, it will bloom freely in a comparatively small state. In its native land it is said to attain a height of 20 feet. Although introduced into this country in 1862, it is still by no means common, a curious fact, as in winter it is one of the most ornamental shrubs we possess. It usually forms a much-branched head, which, when every twig is studded with its peculiarly-shaped blooms, glows like a golden cloud. The flowers will stand from 10° to 15° of frost without injury, and are borne in the months of January and February. The narrow petals of the individual blossoms look like rolls of yellow ribbon before they expand, while when fully open they have the appearance of twisted strips of gold-leaf about ¾ inch in length, each flower being composed of four petals, the bright yellow of which contrasts pleasingly with the crimson sepals. When associated with other shrubs, and just overtopping them, H. arborea is seen to the best advantage. The leaves, which do not appear until some time after the flowers have passed away, have a strong resemblance to those of the Hazel, and this has led to that plant being tried as a stock for it—a hopeless experiment, as the two plants belong to widely-separated families. When H. arborea is more generally grown, it cannot fail to become popular.



FIG. 2.—CHRYSANTHEMUM "WILLIAM TURNER": FLOWERS FROM CROWN BUDS.

H. JAPONICA.—Botanically, H. arborea is identical with this plant, though for garden purposes the two are perfectly distinct. They flower at the same time, but while H. arborea has golden-yellow blossoms those of H. japonica are of a pleasing lemon-yellow colour. Besides the difference in the colour of the flowers there is also a dissimilarity in the habit of growth, H. arborea being a taller, stronger grower than H. japonica.

H. MOLLIS is a new Chinese species introduced into this country in 1898. In its native land it is said to attain a height of 30 feet. It can be readily distinguished from the other species by the size, shape and texture of the foliage. The leaves, being 4 inches to 5 inches long and from 2 inches to 3 inches wide, are considerably larger than those of the other Asiatic species, and they differ also in having

the lower surface covered with a soft, felt-like tomentum, to which the specific name refers. The flowers are of the same type as those of H. arborea, the petals being ¾ inch long, thin, very narrow, but not so wavy. Whilst they are as large as, or probably larger than, those of H. arborea, they are of an even brighter yellow, and open a fortnight or so earlier.

H. virginica.—This species is a native of the United States, and was introduced in 1736. It is remarkable for the fact that it does not bloom until the leaves begin to fall. In September and October, just as its leaves begin to die off in a cloud of pale golden-yellow, it comes into bloom, and at that time it has a very interesting appearance, as the branches are then studded with the peculiarly-formed flowers, the only conspicuous feature in which is the four long, narrow, yellow petals. The blooms being produced in large numbers, form an attractive feature at a time when few other shrubs are in flower. In this country it assumes the shape of a somewhat open bush, and is seen to the greatest advantage when about 6 feet in height, though in America it attains greater dimensions. It is a strong grower, and will soon reach a height of 10 feet or more.

H. Zuccariniana is much like H. japonica except that the calyces are darker and the flowers lighter, whilst the plant blooms a month later. These two resemble each other so closely that, unless carefully examined, the difference between them is not noticeable. *Wyndham Fitzherbert.*

SIR JOSEPH HOOKER.

It is an admirable custom of the Royal Society to confide the task of writing the obituary notices of its deceased Fellows to one of its own body, and to allow the writer in each case ample time wherein to discharge the pious duty. Thus it is that we look to the *Proceedings* of the Royal Society for a thorough and sympathetic account of the life and work of the distinguished men of science of whom death has robbed us.

The custom has been followed in the case of the late Sir Joseph Hooker, and when we say that the task, at once inspiring and sad, of writing the obituary notice of that great man has been confided to Sir William Thiselton-Dyer, we have given a guarantee that the memorial will lack nothing either in literary expression or in scientific value. In truth, the account which Sir William has written of his great predecessor at Kew is in all respects a masterly performance, for in its pages both Hooker and his greatness live.

We have published already in these columns—from the pen of Mr. Botting Hemsley—the story of Sir Joseph Hooker's labours in botanical science, hence in citing from Sir William Thiselton-Dyer's memoirs of Hooker we shall confine ourselves to the concluding pages, wherein is the following interesting and striking picture of Hooker's personality.

Hooker was 5 feet 11 inches in height, and throughout life spare and wiry in figure. In 1859 Huxley wrote to him: "Don't let all the flesh be worried off your bones (there isn't much as it is)." There was a touch of the "quarter-deck" in his carriage. With a fresh complexion, there was in later life a general ruggedness in his aspect, and he was somewhat indifferent as to his personal appearance. Those who knew him in middle age think the published photograph by Mrs. Cameron most characteristic. There are portraits by Collier at the Royal Society and by Herkomer at the Linnean. Huxley wrote of this in 1859 (*H.L.L.*, vol. 2, p. 232), "You were never quite so fat in the cheeks," and quizzed him about the fur coat; it certainly gave an aldermanic effect wholly foreign to him.

Great powers of physical endurance carried him through his travels with no permanent injury to health. His temperament was nervous and high-strung, and he could not stand petty worries, especially those incidental to official life. A somewhat strict disciplinarian, he always retained the sense of official subordination, which he had no doubt learnt in his naval service. He was careful to note that he acted "under instructions," and would speculate as to what the "Board" would say in the smallest administrative details. His outlook on life was calm and philosophic; science and its progress constituted his absorbing and single-minded interest. He would spare no pains to advance it. The *x* Club kept him in touch with what was being done outside his own subject. Geographical research was with him a passion only second to botany. Had he not been a great botanist, he might have been an even greater geographer.

He had a great gift for securing and retaining friendship, which was helped by a keen sense of humour and an admirable gift in letter-writing, which he doubtless inherited from his maternal ancestors. He was a vivacious conversationalist, fond of paradox for the sake of stimulating discussion, but was little prone to draw on his past experiences.

He was nervous about public speaking, but when pushed could make an excellent speech, rising to some eloquence. The speech made on the occasion when his health was proposed as Copley Medallist was a notable performance, reviewing with a dignified modesty the "incidents that directed my own scientific life," and concluding that they "are fruitless, if there is not some inward motive power to compel us to exercise our faculties, and some inward heat, some fervour, to ripen the fruits of our labours." In his own case, he was content to have found it in the motto of Prince Henry of Portugal, the father of navigation, "talent de bien faire," "the wish to do well."

His literary style in early life was laboured and sometimes obscure, but later became nervous and precise, and he was singularly happy, especially in technical matters, in seizing the felicitous and pregnant word. Though as a young man he had beguiled a tedious journey through the Sundarbans with Tennyson's *Princess*, poetry had no appeal to him in after-life. But artistic tastes, inherited from both parents, were not atrophied. He was an accurate and more than ordinarily skilful draughtsman. He was an ardent collector of Wedgwood, and the severity of Flaxman's line and composition particularly appealed to him. He derived much pleasure at home and abroad from the older masters, and admired the modern French school before its later developments. He continued to enjoy music of a classical type throughout.

A few words may be said to indulge a reasonable curiosity as to the physical conditions of a life in which so much was accomplished and which was so prolonged. He was very abstemious and smoked only moderately, but never at work. He could dispense with sleep to a remarkable extent. In his prime he would work till two, to wake at five and read in bed till seven, a habit he had contracted as a student.



Fig. 3.—Chrysanthemum "Mrs. R. Luxford," bearing 70 blooms.

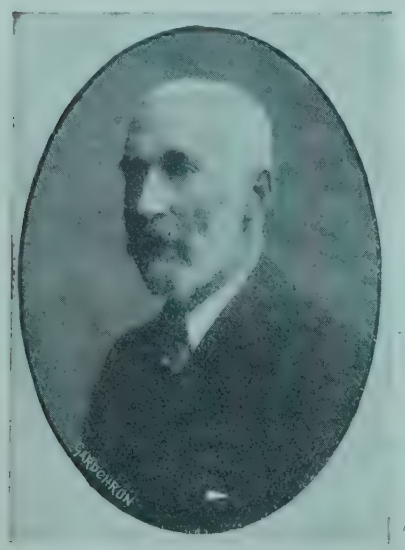
(See p. 4.)

The Week's Work.

THE KITCHEN GARDEN.

By JOHN DUNN, Foreman, Royal Gardens, Windsor.

CARROTS IN PITS.—A sowing of Carrots should be made without delay, to provide a supply of young roots early in the year. Fire-heat is not necessary, provided a bed is made in a brick pit to produce a mild and lasting bottom heat. Leaves are best for the purpose; they should be placed together to ferment a few days before they are formed into the bed, which should be trodden as tightly as possible. Place a layer of rich soil over the bed to a depth of 9 inches, and make the soil moderately firm with the back of a wooden rake. When the surface has been made smooth sow the seeds, and lightly cover them with fine soil. If the soil is moderately moist at the time of sowing, very little water need be applied until the young plants appear, when soft water should be afforded through a fine rose early in the day. Slugs often prove troublesome to young Carrots, but may be kept in check by frequent light dustings of soot. Good varieties for present sowing include Early Scarlet Horn and Early Gem.



FRENCH BEANS.—If French Beans are sown at the present time, the plants will furnish pods about the end of February. Pots 7 inches in diameter are large enough for this sowing. The pots should be crocked and made three parts full with a compost consisting of two-thirds sandy loam and one-third leaf-mould. The soil should be made moderately firm. Six seeds may be placed in each pot, and, when the young plants are well through the soil they may be reduced to four specimens in each pot. Later, top-dressings of rich soil should be afforded in order to encourage the roots to grow near to the surface. The plants should be placed near to the roof-glass, and, as growth advances, they should be syringed frequently to prevent insect pests. "The Belfast" and "Progress" are two suitable varieties for pot culture.

MUSHROOMS.—A supply of Mushrooms may be obtained through the winter and spring months provided sufficient material is available for making the beds. Horse-droppings should be collected daily, and placed in an open shed where they may be turned frequently. If they are allowed to become sour, failure is sure to result. After they are prepared properly the droppings should be removed to the Mushroom house, and allowed to remain loose in the bed until the temperature has reached 85°. At this stage the manure should be turned and rammed together tightly. The spawn should be inserted when the temperature has dropped to 80°, and a few days afterwards the bed should be covered with loam to the depth of 1 inch. Watering will not be necessary until the Mushrooms appear, which should be in about five weeks from the time of spawning but the atmosphere of the house should be kept moist by frequently syringing the walls and floor with water warmed to 60°. No fire-heat should be applied during mild weather.

CUCUMBERS.—If Cucumber seeds have not been sown already, this work should be done without delay. Sow them singly in small, clean pots, and place them over a brisk bottom heat near to the roof-glass. When the plants have made their third rough leaf they should be planted on small mounds of soil placed over a hotbed. The compost should consist of two-thirds sandy loam and one-third leaf-mould, and each heap should not contain more than sufficient soil to cover the roots, especially for the earliest plants. By this means the grower will be enabled to top-dress the roots frequently, affording fresh soil on each occasion. A temperature of 70° is suitable during mild weather.

FRUITS UNDER GLASS.

By JAMES WHYTOCK, Gardener to the Duke of BUCCLEUCH, Dalkeith Palace, Midlothian.

PREPARATIONS FOR FORCING.—One of the most important details in the successful cultivation of fruits under glass is cleanliness; it is therefore essential that the house, fruit trees, and any plants that may be introduced for a time during the winter be all scrupulously clean. It is best not to introduce flowering or foliage plants in the fruit-houses, but where this is unavoidable care must be taken that the plants are not infested with insect pests. While the trees are at rest the woodwork should be scrubbed with soap and water, the walls either painted or limewashed, and the trees themselves given a thorough cleansing, using an insecticide if necessary. The old top-dressings on the borders should be removed, and replaced with fresh materials. If it is considered that the borders require overhauling, most of the soil should be taken out, the drainage put in a proper condition, and fresh compost provided.



EARLY PEACHES AND NECTARINES.—In many districts pot-trees of these fruits give better results than specimens planted in borders. At Dalkeith we commence gathering ripe fruits at the end of April from trees in borders, most of the roots being inside the house. But permanent trees will not respond to very early forcing, unless they were cropped fairly early the previous year, and during the early stages very little fire-heat should be employed. The trees are in flower in houses which were started at the beginning of December: the temperature is kept at 55° in mild weather, but it may be 5° lower or even less in very cold weather. No harm will be done if the sun's rays cause the temperature to rise to 60°: in any case it is advisable that the day temperature should be 5° higher than usual when the trees are in bloom. Fresh air should be admitted both night and day whenever the weather is favourable, the object being to promote a constant circulation of air, as this is essential to the proper development of the blossoms and the setting of the fruits. During very cold weather the top ventilators should not be opened, for cold air should only be admitted through specially-guarded apertures. It has been my practice for several years past to spray the trees very lightly during the middle of the day, when the sun is shining for preference, to ensure the setting of the fruits, and I find that other means of pollination are unnecessary, as almost every flower sets. The successional house should be got in readiness so that forcing may be commenced early during the present month. The temperature for the first fortnight should be maintained at 45° to 50°.

THE VINERIES.—As in the case of Peaches pot-plants are best for furnishing an early supply of ripe Grapes. Pot-vines started last November, by plunging them in a hot-bed of leaves and litter, should have the [illegible] thinned when it can be decided which are the best shoots to retain. Do not allow the vines to carry a large crop, for it is better to secure a few good bunches than a number of smaller ones with inferior berries. The hot-bed will need fresh materials added to maintain the necessary heat. The temperature of the vinery should be 65°, with a rise of about 10° during the day, more or less according to the weather. The hot-bed should be sprinkled occasionally with some soluble nitrogenous manure, such as ammonia, as this will tend to produce healthy foliage. The successional vinery may be started now: for the first two weeks after closing the house the temperature should be 50° to 55°. Promote atmospheric moisture by syringing and damping the paths and bare spaces, regulating the amount according to the conditions out-of-doors. There is still time in the case of late vines to do any necessary renovation to the borders, but it is not advisable to disturb both the outside and inside borders the same season. In doing this work preserve the roots from injury as much as possible, and above all see that the drainage is efficient. The soil need not be more than 2½ feet in depth, and should be of a retentive nature, with plenty of old mortar rubble incorporated with it. Arrange the roots near to the surface, and guard against wetting the soil to excess until the roots are growing actively.

THE FLOWER GARDEN.

By EDWARD HARRISS, Gardener to Lady WANTAGE, Lockinge, Berkshire.

PROPAGATING BEDDING PLANTS.—The scheme of floral decoration out-of-doors for the coming season should be arranged so that it may be known approximately what numbers of the various plants will be required. The propagator should be informed as early as possible so that he has plenty of time in which to work up a sufficient stock. Standard plants of Fuchsias, Calceolaria amplexicaulis, Pelargoniums, Lantanas, Streptosolen Jamesonii, and Marguerites should be shifted into larger pots when increased root-room is necessary, keeping them in a house having a temperature of 55° or 60°. They will grow freely if the atmosphere is kept moist and the foliage sprayed with lukewarm rain-water occasionally. When the leading shoots have attained a desired height they should be pinched and all growths below the "head" removed frequently. Standard plants require plenty of room; where space is limited they may be arranged amongst dwarfer subjects. Specimen or dot plants should be given a similar treatment. Many of last year's specimen and standard plants may be utilised again provided they were pruned hard when lifted from the beds in the autumn. They will do best in a cool house, as it is not desirable for them to make much growth for at least another two months. During the past few years annuals have become very popular in the flower garden. Most of them have a pleasing habit of growth, whilst their flowers are brilliant and of diverse colours. As certain kinds must be sown at the end of the present month, the seeds should be ordered at once. Antirrhinums are among the most useful annuals for massing in beds, but the colours need to be selected carefully. Larkspurs also are very effective and useful for supplying cut blooms. Clarkia, Godetia, Dimorphotheca, Phlox Drummondii, Phacelia, Nemesia, Nigella, Lavatera, Dianthus, Salvia, Coreopsis and Cosmea are a few annuals which may be used effec-



THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir TREVOR LAWRENCE, Bart., Burford, Dorking.

DENDROBIUM.—In consequence of the mild winter, such species as D. Wardianum, D. crassinode, and D. lituiflorum have, in addition to developing their flower-buds, commenced to make new growth from the bases of the flowering growths. These plants and their hybrids, which include D. Clio, D. micans, D. Juno, D. Astrea,



D. Wardiano-japonicum, D. Aspasia, D. Alcippe, and D. crassinode-Wardianum (syn. D. Waltonii) will require special attention. Everything possible should be done to prevent the new growths from developing quickly; regulate the temperatures so that the conditions are not too warm, afford moisture sparingly at the roots, and do not promote too much atmospheric moisture. Unless these conditions are observed, the flower-buds will be liable to turn yellow and drop. Keep the plants for the present in a comparatively cool and dry atmosphere, in a temperature varying between 50° and 60°, affording plenty of fresh air whenever the weather is favourable. It is advisable to expose the plants to all the sunshine. They should be examined carefully two or three times weekly to see if water is necessary; if the new pseudo-bulbs show the slightest signs of shrivelling, water the roots sparingly. When the flower-buds are well advanced, place the plants in a rather warmer atmosphere in full exposure to the light. Afford a little extra water to the roots as the flowers expand, but even then, and until the flowers fade and the young growths commence to develop new roots, watering must be done with great care, as the growths are liable to damp off. D. nobile, D. aureum, D. Findlayanum, D. Linawianum, D. transparens, D. Pierardii, and their hybrids are not so difficult of management. The plants should be rested in a cool house till the flower-buds are well advanced, when they should be removed to the Cattleya house and watered carefully till the flowers are over. By that time it will be seen that there are some plants which have not commenced to grow. These may, with advantage, be returned to the cool house and rested again until growth commences afresh. Plants of D. primulinum, D. crepidatum, D. cretaceum, D. Parishii, D. albo-sanguineum, D. capillipes, D. aggregatum, D. superbum, also its rare varieties Burkei and Anosmum; D. Huttonii, and the pure-white D. Dearei, should be suspended near to the roof-glass of the Cattleya house and be kept rather dry at the roots till the flower-buds appear. When the inflorescences become prominent, it is advisable to place the plants in the lightest position in the East Indian or other warm house. D. superbiens, and especially its varieties, often fail to bloom satisfactorily; the principal cause of this is because they are not grown in a cool house and the roots kept dry and resting for a sufficient period. The tall-growing species, including D. fimbriatum, D. moschatum, D. Paxtonii, D. clavatum, and D. dixanthum, should still be at rest, and remain so for the next two or three months. Under this treatment they will be more floriferous and produce larger spikes than if grown in warmer conditions. D. Dalhousianum should be grown in the warmest temperature at all times, and, during the resting season, should not be kept excessively dry at the root, affording only sufficient water to keep the stem and leaves fresh and plump. A long, dry rest is undoubtedly conducive to large spikes of bloom, but the after growth is often deficient in strength.

THE VARIOUS DIVISIONS.—In my notes I shall group the structures in which Orchids are grown into five divisions, namely, East Indian, Cattleya, Mexican, intermediate, and cool-house. Their respective temperatures for this time of the year should be as follow:—60° to 65°, 55° to 60°, about 55°, 50° to 55°, and 45° to 50°. The highest figures are for evening, and the lowest for early morning. A few degrees higher may be allowed if caused by sun-heat, whilst a few degrees lower will do no harm during exceptionally cold nights, when the houses, owing to the unusual amount of fire-heat, are comparatively dry.

THE HARDY FRUIT GARDEN.

By B. GOODACRE, Gardener to Sir ERNEST CASSEL, Moulton Paddocks, Newmarket.

PLANTING OPERATIONS.—Arrears of planting should be completed whilst the conditions are favourable, although, as a general rule, fruit trees of all descriptions succeed better when shifted just before the completion of the leaf-fall. The ground should be prepared in the early autumn to allow time for the soil to settle. Efficient drainage is essential to the successful cultivation of all fruits, therefore this point should be given special attention. If the nature of the subsoil is such that water passes away freely at a depth of, say, 2½ to 3½ feet, nothing further will be required. But if this is not the case, means must be taken to drain the land. If pipes are not employed, a good layer of broken bricks, rough stones, and mortar rubble should be placed in the bottom of the trench during trenching operations. It is also well to place on the top of these a good layer of well-rotted manure, some broken bones or oyster shells, and a scattering of soot, as the expense and extra labour will be amply repaid in better results. The ground should be dug to a depth of from 2½ to 3 feet, according to the amount of top soil. Let the system of planting be thorough; it seldom pays to plant an occasional young tree amidst a few old, exhausted ones. If the ground is cleared, cleaned, and treated as advised good results are certain. Another important but oft-neglected detail is firm planting; always tread the soil firmly around the collar of the plant, and, in the case of standard specimens, secure the stem to a short stake. Tie firmly, but not too tightly, using soft cord to prevent injury to the bark; a strip of woollen cloth should be placed around the stem where the tie is made, as the slightest scratch to the bark may become an unsightly scar as the stock swells and the tree becomes older. Always allow a few days to elapse before tying the tree, as the soil is sure to sink a little, and the tree may become strained, not only causing the string to cut into the bark, but also exposing some of the roots. Old orchards and plantations of bush fruits will be greatly benefited if, after being thoroughly cleaned, a good mulching of rotten manure is placed over the roots; the mulch will not only act as a fertiliser, but will keep down weeds. Bush fruits should always be planted in batches, so that the fruits are easily protected by netting, which must also be employed to prevent damage by bullfinches in the early spring.



PRUNING.—The shoots of bush trees intended for furnishing fruit for culinary purposes should not be thinned severely, as, provided the fruit is clean and mature, quantity and not quality is the chief consideration. But cordon and espalier trees, grown especially for a supply of dessert fruit, require extra thinning. Apples, Pears, Plums, Cherries, Gooseberries, Currants, Raspberries, Apricots, Peaches, and Nectarines may all be pruned, but the work must not be carried out when the wood is frozen. Old branches, intended to be grafted in the coming season, should be cut back to a desired length whilst the sap is still dormant; if this is delayed, the bark will die back from the cut surface and seriously affect the results. If scions are needed later on, they should be cut off at once and placed in a damp situation sheltered from drying winds and the direct rays of the sun.

PLANTS UNDER GLASS.

By F. JENNINGS, Gardener to the Duke of DEVONSHIRE, Chatsworth, Derbyshire.

GENERAL REMARKS.—The most important question for the gardener to consider is the tastes of his employers, for his duty is to produce plants and flowers for whatever seasons of the year they require them. His work is simplified if he has every convenience at his disposal, namely, plenty of money, good plant houses and frames, labour, and last, but not least, a good climate. A gardener in the northern counties often finds he has to cope with many difficulties that his southern colleagues cannot understand, and for this reason all young gardeners should endeavour to gain experience both north and south during the time they are still journeymen. In many of the northern counties, and especially near great manufacturing centres, plants that in the south can be hardened off out-of-doors during the summer months cannot be so treated. In making these remarks, I wish young gardeners to note that no hard-and-fast rules can be observed, they must be always ready to adapt their methods to the conditions they have to meet.



TREE CARNATIONS.—In this locality and farther north, Carnation cuttings should not be struck later than the month of January, and the sooner they are in the better. A good way to strike them is to get an ordinary cutting box (say 2 feet 6 inches by 1 foot and 2½ inches deep) and fill it with ordinary river or silver sand or gravel sifted through a fine sieve. The box should then be placed in a house with a bottom heat of about 60° and an atmospheric temperature of 55°. Care should be taken that the cuttings are free from red spider. A good plan is to put the cuttings into a tank of cold water for the night, and next morning insert them in the sand with an ordinary dibber, watering them afterwards with warm water. Repeat the warm water for about eight days; after that period spray with a syringe overhead in the ordinary way until the cuttings are rooted, which at this time of the year will take from 12 to 14 days. The old plants of Tree Carnations that have been flowering all the winter should be carefully examined for red spider and syringed with diluted nicotine—one tablespoonful to two gallons of water. Plants treated in this way will be kept free from insect pests.

PROPAGATING HOUSES.—These houses should be thoroughly cleansed and got ready for immediate use. Batches of scented-leaved and winter-flowering Pelargoniums should be propagated at once. Put the cuttings three in a pot, and place the pots on a shelf in a warm house, thoroughly soaking the soil with water when the cuttings are put in. Where quantities of plants for the edging of stages are required, fresh batches of cuttings should be propagated A good plan is to insert these cuttings in 3-inch pots in ordinary sifted potting soil with a little sand and leaf-mould added. In cases where there is insufficient space, get an ordinary box, knock the bottom out and place it in a warm stove or vinery. Fill the box with porous [illegible] insert the cuttings and cover them with glass first thoroughly soaking the soil with water

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS, 41, Wellington Street, Covent Garden, London.** *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

Special Notice to Correspondents.—*The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

Illustrations.—*The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable plants, flowers, trees, &c., but they cannot be responsible for loss or injury.*

Local News.—*Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.*

Newspapers.—*Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see.*

APPOINTMENTS.

MONDAY, JANUARY 6—
Royal Hort. Soc. Exam. for Employés in Public Parks and Gardens.

TUESDAY, JANUARY 7—
Royal Hort. Soc. Coms. meet. Hort. Club meet. (Lecture by Mr. H. Cowley on "A Journey to Bulgaria.")

THURSDAY, JANUARY 9—
Bolton Hort. and Chrys. Soc. Annual Meet.

FRIDAY, JANUARY 10—Kew Gardeners' Social Evening.

MONDAY, JANUARY 13—
United Hort. Ben. & Prov. Soc. meet.

TUESDAY, JANUARY 14—
Scottish Hort. Assoc. Ann. Meet. Nat. Amateur Gard. Assoc. Ann. Meet. Royal Institution meet. (Lecture by Prof. W. Bateson, F.R.S., on "The Heredity of Sex and Some Cognate Problems.")

WEDNESDAY, JANUARY 15—
North of England Hort. Soc. meet. at Leeds. (Lecture by Mr. R. Farrer on "Treasures of the Alps.") Royal Meteorological Soc. meet.

THURSDAY, JANUARY 16—
Linnean Soc. meet. Royal Inst. meet. (Lecture by Mr. Seton Gordon on "Birds of the Hill Country.")

FRIDAY, JANUARY 17—
Royal Inst. meet. (Lecture by Prof. J. J. Thomson.)

TUESDAY, JANUARY 21—
Royal Hort. Soc. Coms. meet. Royal Inst. meet. (Lecture by Prof. Bateson, F.R.S.)

THURSDAY, JANUARY 23—
Gardeners' Royal Ben. Inst. Ann. Meet. and Election of Pensioners, at Simpson's Restaurant, Strand, at 2.45 p.m. Royal Inst. meet.

FRIDAY, JANUARY 24—
Royal Inst. meet. (Lecture by Prof. John Oliver Arnold.)

MONDAY, JANUARY 27—Surveyors' Inst. meet.

TUESDAY, JANUARY 28—
Royal Inst. meet. (Lecture by Prof. W. Bateson, F.R.S.)

FRIDAY, JANUARY 31—
Royal Inst. meet. (Lecture by Mr. George M. Trevelyan.)

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich—37·9.

ACTUAL TEMPERATURES:—
LONDON.—*Wednesday, January 1* (6 P.M.) Max. 48°; Min. 42°.
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—*Thursday, January 2* (10 A.M.): Bar. 29·8°; Temp. 51°; *Weather*—Fine.

PROVINCES.—*Wednesday, January 1:* Max. 46° Boston; Min. 40° Scotland N.

SALES FOR THE ENSUING WEEK.

MONDAY AND WEDNESDAY—
Roses, Gladioli, Liliums, Perennials, &c., at Stevens's Auction Rooms, 38, King Street, Covent Garden.

MONDAY AND FRIDAY—
Herbaceous and Border Plants, Perennials, Liliums, Gladiolus, Begonias, and other Bulbs and Roots, at 12; Roses and Fruit Trees, at 1.30; at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

WEDNESDAY—
Perennials and Herbaceous Plants, Hardy Bulbs and Tubers, at 12; Special Sale of Roses, at 1; Palms and Plants, at 5; by Protheroe & Morris.

THURSDAY—
Thousands of Miscellaneous Bulbs, Corms and Roots, at 11; 4,247 cases Japanese Liliums, at 2.30; by Protheroe & Morris.

FRIDAY—
Imported and Established Orchids in variety, by Protheroe & Morris, at 12.45.

Nature Reserves.

In one of his last Essays Huxley contrasted in his trenchant manner the natural world with the world of civilisation, and showed that the latter wages—and for its preservation must wage—constant war against the former. Engaged in this struggle modern civilisations have been apt to show no quarter to the vanquished, and as a consequence there are many parts of the world whence the more delicate members of the natural flora and fauna have been banished. This destruction of wild animals and plants was, for a long time, regarded as a necessary evil—a regrettable incident in the march of the army of civilisation. A casual regret perhaps was uttered; but the feeling which provoked the expression was not profound enough to arrest the process of destruction, nor to compel men to pause and reflect whether this war *à outrance* against wild nature is essential to progress.

Byron's protest that "man marks the earth with ruin" fell on deaf ears, and not till recently has there arisen, at least in this country, a widespread determination to save something of Nature for the enjoyment of the descendants of our civilisation. Fortunately the way of salvation with respect to Nature's flora and fauna is easy. As the naturalist knows, the way shown by Kipling in one of his most fascinating parable-stories, *Letting in the Jungle*, is as practicable as simple. The substance of the story, as we remember it, is as follows:—A man offended the elephant which lived in the neighbouring forest, and the elephant from revenge broke down the man's fences and let in the jungle. The barriers broken, Nature triumphed easily in the struggle, and the man's fields, reclaimed by her, became once again a part of the jungle.

The moral is as clear as it is true, and those who are engaged in the task of saving something of wild nature from the iron heel of civilisation know that all they have to do is to fence off civilisation and leave Nature to do her work in her own way. As the result of that work, done with the slow sureness characteristic of Nature, though we may not bring the dead to life nor recall the rarest of wild things from extinction, one by one the rare and shy—bird and beast and flower—will find sanctuary in the unmolested regions which come to epitomise the natural life of the country.

The success of such beneficent interference with civilisation's heedless destruction has been demonstrated again and again in Germany and in other parts of the world. Forests have been preserved in this newer sense of the word, islands converted into bird sanctuaries, and in Belgium Professor Massart has recently completed a survey of sites which should be reserved in order to protect wild nature in Belgium. Nor have our fellow countrymen, whose love of Nature is one of their saving graces, failed altogether to "let in the jungle." The Selborne Society has done valuable work, and the National Trust exists for the purpose of assisting these concessions to Nature; nevertheless, much remains to be done. Our towns are encroaching upon the country, our manufacturers are dotting the lines of railway with their factories, the smoke from whose chimneys shows like splashes of ink on the green cloth of our landscape. The Fern and wild flower snatcher abounds, and his vandalism is checked only with difficulty. Great towns of lodging houses frown upon our bays and cliffs, and the sterile waste from our mines is piled in heaps of dust in which nothing may blossom or smell sweet. The urgency of establishing nature reserves in this country is the greater because of the smallness of Great Britain, and because so many of our fairest spots are owned privately, and may at any time pass out of the possession of a wise and generous owner and become eligible building sites.

For these reasons we welcome most warmly the announcement of the formation of a society for the promotion of nature reserves, and commend its objects to the notice of our readers, many of whom will doubtless become members of the new body. The work of the society will consist in collecting information with respect to tracts of country which are suitable for the purposes of nature reserves, in preparing schemes suggesting how these regions may be secured for this object, to obtain such areas, and to hand them over to the National Trust, and thus preserve to posterity some part of our native land with its fauna, flora and geological features.

The society does not demand a subscription from its members, and membership is determined by election on the invitation of the executive committee. Among the members of the committee are Dr. I. Bayley Balfour, Sir Francis Darwin, Mr. G. Claridge Druce, Dr. Bretland Farmer, Sir David Prain, and Mr. W. M. Webb.

Phosphorescent Plants.

Among the most striking of the phenomena to be observed in Nature is the light emitted by various plants and animals. The phosphorescence of the sea, described in wonderful verse in the *Ancient Mariner*, is somewhat rare on our coasts, but common enough on the other side of the Channel. It is produced generally by vast crowds of minute animals (Noctiluca). But it is not the sea only which produces from time to time "its mass of liquid fire." Now and again, as he walks along the ooze left by the receding tide, the observer may see, as he lifts his foot from the mud, a blue flash as though unwittingly he had trodden on a fallen star. If the party be numerous it also will move like the water-snakes, in tracks of shining white. In this case the agent which produces the light is a bacterium.

Nor is this strange power of unguessed significance confined to minute animals and bacteria. Certain of the fungi, particularly some of those which attack trees, are also luminous. These fungi spread below ground from tree to

tree and so reach new hosts. The underground "roots" of each fungi look like brown whipcord, and are known as rhizomorphs, and may be seen in certain cases, when exposed to the air, as thin lines of light. Massee, quoting Berkeley, points to the fact that the sterile mycelium in decayed trees may also give out light. A log of Larch or Spruce had been dragged up a steep hill, and villagers who had occasion to mount the hill at night found shining patches on the ground, which patches, on examination, proved to coincide with torn-off fragments of the tree. Continuing their ascent they came upon "a blaze of white light" which emanated from masses of mycelium showing through the broken bark. Nor could the light be extinguished by rubbing: as aromatic herbs give out their odours most when they are crushed, so the more the bark was rubbed the brighter was its phosphorescent light.

Unlike that of the glow-worm, and of other animals which throw an intermittent light, the phosphorescence of fungi and of bacteria is continuous. The most recent suggestion as to the cause of this strange phenomenon is from Professor H. Molisch, who has produced evidence to show that phosphorescence in plants is due to the formation of a definite substance—photogen—by the protoplasm of the cells. This substance, which is either a protein or a protein derivative, undergoes oxidation in the presence of oxygen and water, and the oxidized produce is luminous. In all probability, therefore, the production of light by these organisms is incidental to the inter-action of oxydizing agents (oxydases) and a light-producing body. In all the oxidation processes of the body a certain amount of the energy which is liberated appears in the form of heat; in the phosphorescent fungi and bacteria some of this energy of oxidation takes the form of light.

ROYAL HORTICULTURAL SOCIETY.—The next meeting of the Committees will be held on Tuesday, January 7, in the Society's Hall, Vincent Square, Westminster. There will be no lecture on this occasion.

HORTICULTURAL CLUB.—The members of the Horticultural Club will meet at dinner on Tuesday, January 7, at the Hotel Windsor, Victoria Street, Westminster, when Mr. HERBERT COWLEY will deliver a lecture illustrated by lantern views on "A Journey to Bulgaria."

THE HONOURS LIST.—In the New Year's honours list there are three names well known to our readers. The conferring of a baronetcy on Sir FRANK CRISP will give general satisfaction, for Sir FRANK is a liberal patron of gardening and President of the Horticultural Club. His residence at Friar Park is famous for its unique rock-garden, and for many other delightful features, which are frequently open for inspection by the public owing to the generosity of the proprietor. Mr. FRANCIS DARWIN, F.R.S., receives a well-deserved knighthood. He has been described as an "illustrious son of an illustrious father," and his researches in botanical science have been profound and illuminating. Mr WYNDHAM R. DUNSTAN, F.R.S., Director of the Imperial Institute, worthily receives the appointment of Commander in the Most Distinguished Order of St. Michael and St. George. Amongst his numerous scientific publications are several dealing with the cultivation of Cotton in various parts of the world, on the Agricultural Resources of Cyprus, and Agriculture in Asia Minor.

"JOURNAL" OF THE R.H.S. GARDENS CLUB.—The R.H.S. Gardens Club is an association of past and present employés of the Royal Horticultural Society, and the *Journal* is issued once a year. Besides recording the doings of the members, the proceedings of the Wisley Gardens Mutual Improvement Society, and publishing extracts from letters of old members, and other items of a personal nature, the issue for 1912 contains much that is of general interest to gardeners. The Editor, Mr. JOHN FRASER, contributes an article on the Education of Gardeners. "A gardener must know everything of something and something of everything." The writer wisely insists on first importance being given to practical methods, but the subjects of botany, chemistry, geology, entomology, mycology, and plant hygiene should each be studied. Mr. E. W. STOKES writes on plant novelties, but his list is not quite up-to-date. Those who would learn the trials and troubles of a county lecturer should read the experiences of Mr. C. J. GLEED. "The work is one which would not appeal to everyone, as it is by no means the sinecure that it is usually considered among gardeners." The history of a variety known as Pink Progress is given by Mr. C. H. HERBERT, who states that although this fine variety is generally supposed to have originated from Dianthus plumosus, he raised it from a cross between two laced Pinks—Robert Houlgrave and Arthur Brown. Mr. F. J. CHITTENDEN gives a list of Galls found in the neighbourhood of Wisley, and contributes an interesting note on Horticultural Instructorships. The frontispiece is a portrait group of the R.H.S. School of Horticulture, 1912, which includes the garden staff and students.

MR. GEORGE KEMP.—The many friends of Mr. GEORGE KEMP, of Woolhampton Park Gardens, Berkshire, will learn with regret of the loss he has sustained in the death of his wife.

MR. G. I'ANSON.—The employés of Messrs. CHARLESWORTH & Co. have presented Mr. I'ANSON with an oak cabinet on the occasion of his leaving the firm. Mr. I'ANSON was for many years Orchid-grower to Messrs. HUGH LOW & Co. at their nurseries at Clapton, where many beautiful new species made their first appearance.

NURSERY EMPLOYÉS DINNER.—The annual dinner, the 15th in succession, of the firm of Messrs. DICKSON & ROBINSON, Manchester, took place on December 20, at the Victoria Hotel. The firm number among its employés members with 40, some of 30 and several with 20 years service. Mr. ROBINSON, head of the firm, occupied the chair. Sundry reviews of the past year's efforts and results, and an excellent programme of music contributed to an enjoyable evening.

AGRICULTURAL HOLDINGS ACT.—The text has been issued of a Bill introduced into the House of Commons by Mr. W. RUNCIMAN, President of the Board of Agriculture and Fisheries, to remove doubts as to the effect of Sub section (2) of Section 42 of the Agricultural Holdings Act, 1908. and the enactments re-enacted in that sub section. It is now declared that a tenancy from year to year under a contract of tenancy current on January 1, 1896, shall not be deemed to have been determined thereafter by any provision in section 61 of the Agricultural Holdings (England) Act, 1883, and part of the sub-section is to be repealed. The Act shall apply to any claim for compensation which has not before the passing of the present measure been determined by any judgment or order of a Court of competent jurisdiction or award or agreement, whether the improvement to which the claim relates was made or begun before or after the commencement of the Agricultural Holdings Act, 1908.

THE BIG TREES OF CALIFORNIA.—The giant Sequoias are known the world over, and botanists and foresters of all nations take an interest in the wonderful groves which constitute, in all probability, the oldest living organisms upon earth. The most recent account of the state of the Sequoias is contributed by Mr. G. B. SUDWORTH to the November number of the *American Naturalist*, a summary of which is published in *Nature* (December 19, 1912). Of the big trees 31 groups are known. The groves and groups cover areas which range from less than an acre to 10 square miles. They occupy collectively some 50 square miles. Some of the Sequoia areas are owned privately, but others belong to the Federal Government. In the latter forests no felling—except that which is absolutely necessary—is allowed; but in the former lumbering still goes on. Fire, however, is the greatest of the dangers to which this remnant of a bygone vegetation is exposed. Though the trees in close formation do not regenerate themselves naturally, it is stated that where, as in the southern groves, lumbering and fire have opened up the forest and destroyed the vegetable debris on the surface of the soil, young big trees are found abundantly near the seed-trees.

THE WORLD'S CROPS.—The Board of Agriculture and Fisheries have received the following telegram from the International Agricultural Institute:—The estimated production of Wheat in Australia is 42,364,000 cwts. The total production of Sugar Beet in the following countries is 779 million cwts., or 35.9 per cent. above last year's production: Prussia, Belgium, Bulgaria, Denmark, Spain, France, Italy, Roumania, Russia in Europe, Sweden and Canada. The estimated production of cleaned cotton in the United States is 59,039,000 cwts., and in India 15,464,000 cwts.; the total production in those countries and Japan and Egypt being 81 million cwts., or 3.8 per cent. below last year.

PARTIAL STERILISATION OF SOIL BY LIME.—According to Dr. HUTCHINSON lime must be added to the list of substances which bring about a partial sterilisation of the soil. Like other soil antiseptics, such as formaldehyde, and like high temperatures, lime destroys many soil bacteria and protozoa, and so enables the bacteria which remain to increase rapidly and to bring about the production of large quantities of plant food. We may see in Dr. HUTCHINSON's conclusions, which were presented to the Agricultural Section of the British Association at Dundee, an added reason why liming the soil is an indispensable adjunct to good cultivation.

NEW SPECIES OF HEDERA.—Two new species of Ivy, Hedera himalaica and H. japonica, are described by Dr. F. TOBLER in his new monograph of the genus Hedera,* making six species in all, which are well illustrated by reproductions from photographs. In a short review of the work in *Nature*, it is stated that besides detailed descriptions of the morphology of the genus, the work includes an interesting chapter on the biology and physiology of the Ivy, followed by chapters on the history of the genus and its culture as a garden plant.

* *Die Gattung Hedera*, Gustav Fischer, Jena. Price 6.50 marks.

PARASITES OF PITCHER PLANTS. — Mr. CAVERS, in his interesting botanical notes in *Knowledge*, gives an account of the animal parasites of pitcher plants which have been investigated recently by JENSEN (*Ann. Jard. Bot. Buitenzorg*, Suppl. 3, Part 2). This author described an interesting case of symbiosis or parasitism, analogous to the presence of intestinal parasites in animals, in the pitchers of Nepenthes. These pitchers are, as is well known, filled with fluid containing ferments in which dead insects are digested, but JENSEN has found that several species of fly larvæ develop normally in this fluid. So abundant are they that the author found them in every one of the hundreds of pitchers he examined during several successive years in Java. These dipterous larvæ were reared, and six of the seven discovered in this curious habitat were found to be new species, belonging to three different families of Diptera. One of the most remarkable characters of these larvæ is their power of "anti-fermentation," which appears to retard the action of the ferments in the fluid filling the pitchers. This retarding action was definitely proved by experiments, the larvæ being placed in solutions of pepsin and pancreatin. Closely related larvæ taken from neighbouring pools were unable to live in the pitchers, hence the anti-ferment is to be regarded as an adaptation to this symbiotic mode of life.

PUBLICATIONS RECEIVED.—***The Market Garden: How to Start and Run it Profitably.*** (London: C. Arthur Pearson, Ltd.) Price 1s. net.—***Bulletins and Circulars Issued by the Cornell University, Agricultural Experiment Station of the College of Agriculture, Ithaca, N.Y.:*** Frosts in New York, by Wilford M. Wilson; Co-operative Tests of Corn Varieties, and Further Experiments on the Economic Value of Root Crops for New York, by Edward R. Mines; Constitutional Vigour in Poultry, by C. A. Rogers; Culture of the Sweet Pea, by Alvin C. Beal; Computing Rations for Farm Animals, by E. S. Savage; and Working Plans of Cornell Poultry Houses, by C. A. Rogers.—***Pamphlet Issued by Department of Agriculture, Canada.*** Hardy Roses, by W. T. Macoun.—***U.S. Department of Agriculture, Washington: Bulletins:*** The One-Spray Method in the Control of the Codling Moth and the Plum Curculio, by A. L. Quaintance and E. W. Scott; The Boll Weevil Problem, by W. D. Hunter; Apple Breeding in Canada, by W. T. Macoun.—***Crops and Methods for Soil Improvement,*** by Alva Agee. (New York: The Macmillan Company.)

THE BULB GARDEN.

THE FORCING OF BULBOUS PLANTS.

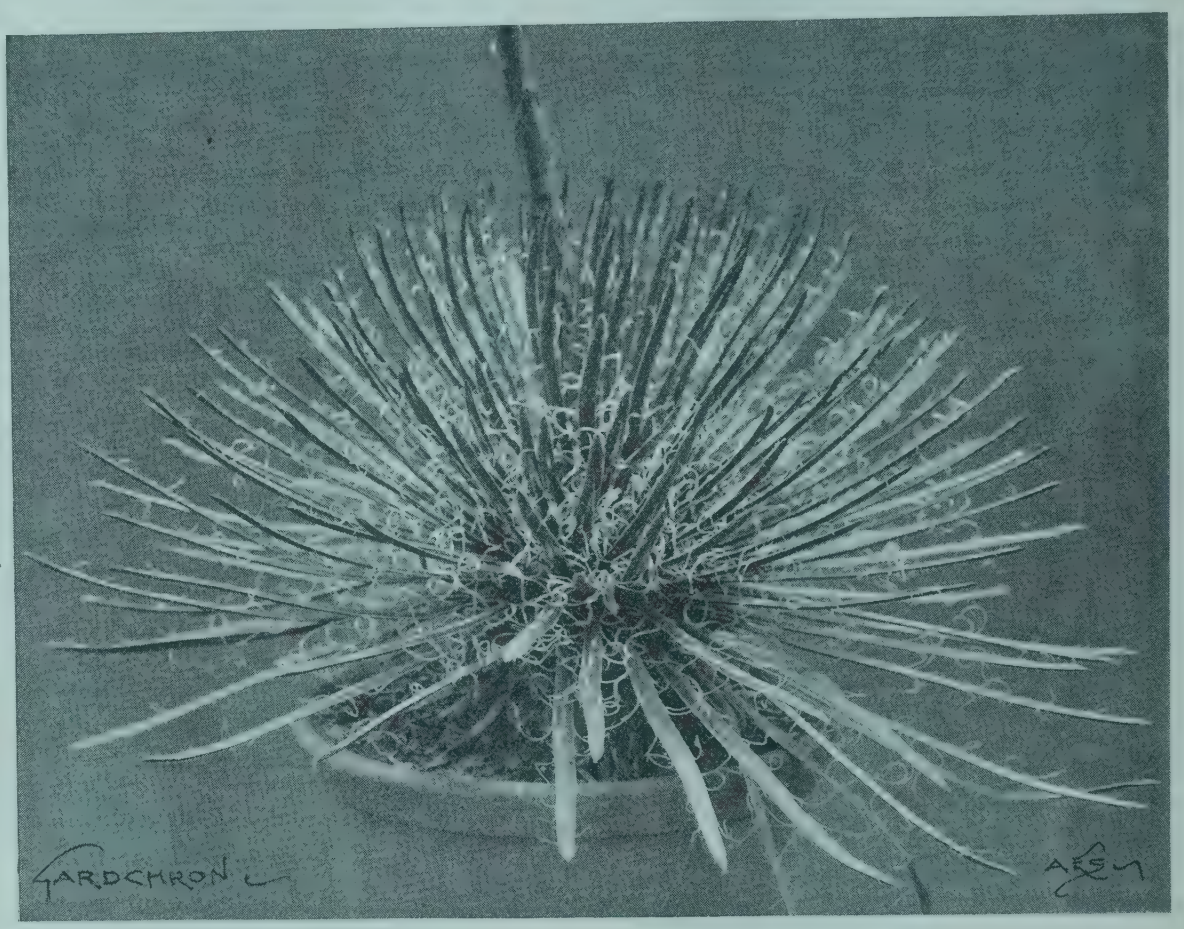
THERE are two main methods of forcing bulbous plants, one or other being adopted according to the result desired. Heat, which is the first and most common method, induces unnaturally fast growth; cold, the second method, retards or hinders the development of the plants.

Both these methods are useful from the point of view of the florist and gardener; but both exact a heavy toll by exhausting the energies of the plants so treated. This tax, however, is capable of being reduced to a minimum in the hands of a capable operator. There are certain principles involved, which, if rightly understood and intelligently followed, will lead to success, and keep within reasonable limits the failures and losses attendant on the forcing of plants. To ignore such principles is most certainly to increase the chance of loss.

For example, to introduce Lilies, Tulips, or Daffodils into strong heat without due preparation would almost certainly be fatal. Further, selection plays a large part in the plans of the skilled forcer; there are certain varieties of Daffodils and Tulips which entirely fail to respond when placed too early in artificial heat. Indeed, the effect is usually the very opposite of what is intended; the flowers are often retarded, rather than forced forward. It has even been found in such a case, that a batch of a similar variety, introduced at a later date into artificial heat, will flower first! Examples of this are furnished in Narcissus poeticus ornatus and the old double white variety of the same species.

On the other hand, the double forms of N. Telamonius—and there are quite a number of them—force readily and well. Root production and activity play an important part in the successful forcing of these and allied plants; that is to say, generally, though not invariably. In plucking this Daffodil at flowering time one occasionally finds that a bulb comes clean out of its place, and the merest glance will show that it is in the last stages of "basal rot." This particular bulb is, of course, almost rootless, and yet it may have produced quite as good a flower as the rest, and even the foliage may show small sign of any disease. How so good a result can be produced in such bad conditions it is difficult to say; but it is possible that the bulb mite responsible for the damage had concentrated on the basal portion of the bulb, leaving the core or central part for the moment untouched. Then N. Telamonius is highly sensitive to, and greatly influenced by, artificial heat and moisture, and this might account for its satisfactory response. That a bulbous plant in the last stages of disease is capable of producing its flowers unimpaired, without a solitary root-fibre, is somewhat remarkable; but the same may be said of the Lily of the Valley, the freshly-imported crowns of which, under hard forcing, rarely produce root-fibres, and are wholly dependent for their development upon external heat and moisture. Such early-forced plants seldom produce leaves; but later batches produce both root-fibres and foliage with comparative freedom.

Shortness of stature is another characteristic of early-forced batches of the current season's importations of the Lily of the Valley. This is a great loss in these days, when length of stem is a valued asset; but many other plants which are forced hard and very early suffer from the same disadvantage. For instance, Roman Hyacinths which flower in October or November appear capable of sending forth a flower spike only just above the leaves, and the entire plant is but a miniature of the Christmas-flowering specimens, with graceful stems 12 to 15 inches in height. There are, however, other conditions besides early forcing which tend to shortness of growth which may be referred to here. The Tulip may be cited as an example. In January, 1912, I was going through a greenhouse, and the gardener asked me if I could tell him why all the Tulips were flowering so low down—there was scarcely any stem growth at all. The bulbs were first-class examples, and they were potted early. I was able at once to tell him what was the matter—they had been too soon introduced into light and heat without having been plunged in leaves for a time after potting. The result was disastrous—sprawling flowers, almost on a level with the soil, instead of shapely, cup-like blossoms on stems 12 to 18 inches in height. A vital principle in bulb forcing had clearly been neglected. Plunging or, at least, darkness is essential. It takes the place of the soil covering which would be afforded in the open garden. No gardener would dream of planting his bulbs on the surface of a garden bed, and it is not more reasonable to expose them to full light when under pot cultivation. It is equally injurious to plunge the bulbs for a time, and then too soon and too suddenly expose them to the full light. Simultaneously with such exposure all upward growth ceases, the increased light favouring the development of all the lateral parts of the plant. Darkness attenuates the growth, and, in conjunction with heat and atmospheric moisture, will be found to provide favourable conditions for the Tulip. The forced Tulip is highly sensitive to fogs, and if its half-grown buds are exposed to a fog even of short duration they may be irremediably ruined. A frame within the house, darkened by wet mats, is of great value as a protection. Commercial growers darken the forcing house entirely with mats or straw—a system which has much to recommend it. An equable temperature is secured, fluctuations of the atmospheric conditions are reduced to a minimum,



[*Photograph by C. P. Raffill.*

FIG. 10.—AGAVE LEOPOLDII, SHOWING THE ORNAMENTAL CHARACTER OF THE FOLIAGE.

and fog and light are both almost totally excluded. For Tulips, Lily of the Valley, and Roman Hyacinths such conditions are ideal, producing length of stem, purity of colour and general high quality at a minimum of expense and labour. Even a small grower cannot do better than pursue the same system, modified according to his requirements.



[*Photograph by C. P. Raffill.*

FIG. 11.—INFLORESCENCE OF AGAVE LEOPOLDII: FLOWERS GREEN, STRIPED WITH REDDISH-BROWN.

I have said that the systems of forcing both by cold and by heat exact heavy tolls, and in the case of the early forcing of the current season's crop of Lily of the Valley, of Tulips, Daffodils, and Roman Hyacinths, loss of stature, smallness of flowers, and a diminished number of buds are invariable occurrences. In the case of long-retarded Lilies of the speciosum and other groups, a similar loss of stature is seen, accompanied by blind buds at the tips of the inflorescences. In the case of the too hard and too early forcing of the current season's supply of these Lilies, the entire plant often becomes blind when about a foot high. I believe this to be the result mainly of the sparsity of root-fibres, hence all such bulbs should be well rooted.

This loss of stature and flower-buds in long-retarded Lilies is of more than ordinary interest, and is due, I imagine, to a slow but sure progressive movement on the part of the embryo inflorescence within the bulb, even while the latter is apparently quite dormant. It is probably a kind of exhaustion due to an imperceptible yet continuous growth.

An analogous instance occurs in the Daffodil. A shop-stored bulb of "Emperor" planted at Christmas was found on flowering to be of only half the stature of an October-planted bulb the same size. For this or some similar reason the Daffodil cannot be successfully retarded as the system is at present carried out. The plants which are best suited to the process of retarding are those whose floral parts are not only absolutely stationary meanwhile, but are, so to speak, contained in sealed packets. The Lily of the Valley is a good example of such a plant. The floral part is contained in a bud or crown an inch long. The plants can be kept unimpaired in vigour and vitality for months on end, and, when required for use, they are so responsive to the call and so amenable to the new conditions in which they are placed that the day—almost the hour—of their flowering can be predicted. Indeed, the splendid inflorescence and healthy condition of the plants rather suggests that they have benefited by the rest.

Rhododendron sinense and the Lilacs are instances among shrubs where the rudimentary flowers are contained in a bud at the apex of the shoot. However, although I believe the floral parts of the Lilacs remain stationary during their stay in the retarding chamber, they do not exhibit quite their pristine beauty when brought into flower. In Astilbe we have an example of a good herbaceous perennial, whose utility is largely increased and its decorative value scarcely impaired by retardation.

Already the number of plants which will submit readily to this treatment is considerable; but in the near future the number will doubtless be greatly increased, when to the methods we now employ we can add a more perfect knowledge of the subtle influences of etherisation and chloroform in their relation to the forcing of plants. *E. H. Jenkins.*

AGAVE LEOPOLDII.

THE history of a hybrid Agave raised about 30 years ago and named A. Leopoldii was given in a note by *W. W.* in the *Gardeners' Chronicle* November 30, p. 414. The plant was raised by the late Dr. W. B. Kellock (not Killock) in his garden at Stamford Hill, N., its parents being A. filifera and A. schidigera var. He named it in compliment to the late King of the Belgians, Leopold II, who saw and admired the plant when it was exhibited at the Royal Horticultural Society's Show held in the Agricultural Hall, Islington, in 1893. A. schidigera was the seed-bearing parent, and the cross was made some time in the 'seventies. Plants of the hybrid were afterwards distributed, some of them being presented to Kew, where the specimen now illustrated (figs. 10 and 11) flowered in October, 1911. It had a short stem and leaves from 6 to 18 inches long on different plants, an inch wide at the base, spine-tipped, bright green with faint grey streaks, the margins split into long curling brown threads, which finally become white. The flower-spike was about 6 feet high, the upper 3 feet or so, bearing flowers mostly in pairs; the corolla was an inch long, green with red-brown stripes, the stamens 2 inches long with dull red filaments and yellow anthers. The plant matured seeds, but it failed to produce suckers from the base. The charm of this Agave is in the leaves, which form a compact rosette and are pleasingly decorated with white filaments. It will be interesting to watch the development of the seedlings, which, we understand, have recently been raised at Kew from seeds produced by the plant now illustrated. From its history it is not unlikely that the plant figured in the *Botanical Magazine*, t. 8271 (1909); is one of the seedlings raised by Dr. Kellock from the cross which produced A. Leopoldii

THE ROSARY.

THE FIRST MONTH OF THE YEAR.

ALTHOUGH there is not much work to be done amongst Roses out-of-doors during the present month, those under glass will keep the grower busy. The value of the Rose for winter blooming has been recognised more than ever during recent years, and to-day we may find thousands of these plants in bloom during December and January, whereas formerly they were only started into growth in these months. In one respect this is due to the raisers, who have furnished us with suitable varieties for forcing early, amongst them Niphetos, Bridesmaid, Lady Roberts, Richmond, and Liberty, to name only a few. The plants should be afforded some stimulant as soon as the first blossoming is over. I have found it best to apply this in the form of a top-dressing. Remove a little of the surface soil by prodding with a pointed stick so as not to injure the roots, then give each plant growing in a 24-sized pot a good handful of fibrous loam and Clay's Fertiliser in equal quantities. This top-dressing should suffice for the second blooming, but if the plants are required to furnish a third crop of flowers, renew the top-dressing as soon as second blossoming is over.

Care is necessary at this season not to promote an excess of atmospheric moisture, although the conditions should not be dry: on dull days it is well to withhold spraying, simply steaming the plants slightly. Cold pits and a cold house are very useful for housing a second batch of plants, which may be pruned and allowed to develop very slowly.

The Hybrid Perpetual varieties are excellent for the purpose. If pruned now and placed in a structure where an abundance of air may be admitted whenever the weather is mild, a good display of blooms may be obtained late in April and in May without resorting to hard forcing.

Rambler Roses growing in pots or tubs should be pruned. Much of the old wood should be removed entirely, and the lateral growths cut back severely. The columnar form is, perhaps, the most elegant in which to train the Wichuraiana and Multiflora Roses, but the former lend themselves to many modes of training. These Ramble Roses succeed best when their roots are confined. Most of the fine specimens seen at the spring shows of the Royal Horticultural Society at the Temple and elsewhere are grown in small pots, few being larger in diameter than 12 inches.

Climbing Roses on walls and roofs should be attended to, although their pruning was mainly done last summer. It is better to have a few well-ripened rods with healthy spurs than a lot of old, worn-out wood. A dressing of bone flour and well-rotted manure would be very helpful if these were applied at once to the borders and slightly forked into the soil. When the crop is nearing its completion, a top-dressing as advised above would be of great assistance to the flowers.

In addition to the varieties mentioned, I can well recommend the following as good winter Roses:—Melody, Killarney, Mrs. Aaron Ward, Mme. Hoste, White Killarney, Sunburst, Arthur R. Goodwin, Lieutenant Chaure, Sunrise, My Maryland, Rose Queen, Souvenir de Gustav Prat, and Mrs. George Shawyer, whilst all large growers of forced Roses should secure two American varieties that will be introduced this season —Milady and Mrs. Charles Russell.

The average gardener has no time to graft Roses under glass, but should anyone desire to work up a stock of Roses in pots by budding he should pot up seedling Briars at once for stocks. Five-inch pots are suitable, and they should be plunged in ashes out-of-doors. These Briars may be worked next June with buds which can be obtained from forced plants. The budded Briars, if placed in the greenhouse next Christmas and their tops cut off to the inserted buds, will soon start into growth if a temperature of about 50° to 55° is maintained. They will overtake the grafted plants, and occasion far less trouble.

Although the work is best done in October, it is not too late to pot a batch of Roses from the open ready for forcing next winter. The plants should be bushy and well ripened. Cut back the growths to 12 inches, and pot the plants in 7-inch and 8-inch pots in a compost consisting of loam two parts, well-rotted cow and horse manure one part, and a good sprinkling of burnt garden refuse. Rambler Roses thus potted make far better plants for forcing purposes than those grafted under glass.

The H.P. and H.T. Roses should be plunged out-of-doors close together until May, and then thinned out into beds, where they may receive attention during the summer. But Rambler Roses are best grown in a vinery where there is plenty of heat and moisture. At the time of



FIG. 12.—FRUITING SHOOT ON BRACHYCHILUS HORSFIELDII.

potting they should be shortened to about 5 feet, and no further pruning is necessary. The current year plants of Crimson Rambler and a few other kinds potted from the open ground in October and cut down to 12 inches, may, by bringing them under glass in January and affording a gentle bottom heat, be had in bloom by Easter. It is well to select for this purpose two-year-old plants on their own roots and those that have been cut back once.

Of the dwarf, perpetual-flowering Polyantha Roses, the varieties Orleans and Jessie are almost as useful as pot plants as Begonia Gloire de Lorraine. They are easily grown in a temperature of 55° to 60°. Here again plants grown out-of-doors and potted in October are more serviceable than grafted specimens. The plants may be forced gently the first year, if necessary.

ROSE SEEDLINGS.

ROSE seed should now be sown in pots or boxes and germinated in greenhouse temperature. Mice must be guarded against. I prefer to use very small pots, placing one seed in each pot, as this obviates transplanting. If the plants are plunged in fibre in boxes it will prevent a too rapid drying of the soil, for once the seed is sown the soil should never be allowed to become dry. The pots should be well drained, and filled with a mixture of leaf-mould and sifted loam in equal parts. Place the seeds on the top of the soil and push them under the surface by means of a stick to a depth of half an inch. Cover the surface of the pot with silver sand. Do not remove the seeds from the pods until quite ready to sow. The seeds are moist when removed from the pods, and they must not be allowed to become dry. Rose seeds, if cleaned and kept dry, rarely germinate.

Although cross-fertilising is advisable, many of our best Roses have been raised from self-fertilised flowers, and if seed is obtained from choice varieties, there is a reasonable chance of obtaining something of superior merit.

The planting of Roses out-of-doors may still be carried out if the weather remains open. Provided the soil is in a good condition, it is better to plant now than in the spring. But where the soil is very stodgy then it is wiser to defer the work, in the meantime securing the plants and heeling them in. *Experience.*

BRACHYCHILUS HORSFIELDII.

THE fruit of this plant represented in fig. 12, is of a very ornamental character, and this valuable feature sometimes found in the order Zingiberaceæ, to which this genus belongs, is rarely represented in gardens. When the fruit is ripe the valves reflex, they are then brilliant orange in colour on the inside, and expose a central column bearing numerous seeds enveloped in a red aril. A very similar contrast of colour, produced in much the same way, is shown by the fine plate in colour of Momordica Charantia in *Gardeners' Chronicle*, December 21. The fruit of the Momordica is paler than that of the Brachychilus, but the colour of the aril in each case is almost identical.

Brachychilus Horsfieldii is precisely like Hedychium in general appearance, and the present plant was first placed in that genus, from which probably it need not have been separated. The first notice of it I know of in any gardening paper is in the *Gardeners' Chronicle* of May 26, 1894, p. 652, when Mr. Baker, in a short paragraph, refers to its having been received at Kew from the Copenhagen Botanic Garden, and remarks that Petersen, the monographer of the Brazilian Scitamineæ, has lately separated it as a genus on account of its suppressed labellum. Schumann, however, in Engler's *Pflanzenreich*, still retaining the genus, but apparently taking a different view of structure, describes the labellum as very short and deeply bifid, characters by which, coupled with that of a few flowered spike, he separates both Brachychilus and Odontychium from Hedychium. The genus last-named has never been cultivated; it consists of one species only, Hedychium denticulatum of Ridley. Whether the fruit of Hedychium is ever so ornamental or not I do not know—though the valves are sometimes coloured in the same way, and the seeds covered by a coloured aril, sometimes white. Brachychilus fruits freely without artificial pollination, and is of dwarf habit, attaining a height only of about 2 feet. The plant is easily grown in loamy soil in any stove. It is a native of Java, but the Cambridge stock was received from the Jardin des Plantes, Paris, a few years ago. When it was first introduced cannot be determined, since in some botanic gardens it has been found under the name Alpinia calcarata, which is quite a different plant. *R. Irwin Lynch, Botanic Garden, Cambridge.*

SCOTLAND.

SCHOOL GARDENS IN SHETLAND.

There are no fewer than 33 school gardens in the Shetland Islands under the auspices of the North of Scotland College of Agriculture.

DUMFRIES GARDENERS' DINNER.

The third annual dinner of the gardeners of Dumfries and district was held on December 20, in the Queensberry Hotel, Dumfries. Mr. J. Hutchison, Terregles Gardens, occupied the chair.

GIFT OF PLANTS FOR GLASGOW PARKS.

The trustees of the late James Coats, of Ferguslie, Paisley, have presented to the Glasgow public parks the plants in the glasshouses at Ferguslie.

NORTHERN SEEDS AND ROOTS ASSOCIATION.

The following trophies have been presented to this association for competition at the February show at Portsoy:—A silver cup from Provost Sutherland to replace the one he gave previously and which has now become the property of the winner; a silver Rose bowl from the Secretary, Mr. Young; and a silver cup from a former townsman, Mr. Henry Sandison, Winnipeg.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

The R.H.S. Trials (see pp. 431, 453),—We are very pleased to learn from a note in a contemporary that our suggestion that raisers' names be added to R.H.S. Trials in each case will be adopted in the future by the R.H.S. It would seem hardly necessary, but perhaps we ought to have added to our recent letter to you that we do not object in any way whatever to other firms sending our varieties for trial; on the contrary, we welcome and are grateful to them for doing so; but in fairness to ourselves, and, we think, to the public, we are of opinion that our name as the raisers should appear upon the plants at the trials and in the reports of the trials. We are pleased to see a letter from Mr. Cuthbertson showing how our suggestions may be carried out in practice. We would like to ask, however, the intention of Mr. Cuthbertson's remark:—"I do not agree with all Messrs. Kelway say. I might ask why did not they themselves send a full collection of Delphiniums. Have they so many orders for them at a guinea a time that they could not spare them?" Is this a serious question or intended in some mysterious way as a reflection upon us? If the former, we beg to say that if the R.H.S. would care for us to send a much larger number we shall be extremely pleased to do so. We possess a very large collection of distinct varieties, but a large proportion of the collection had already received Awards of Merit from the R.H.S. We therefore sent some which the Floral Committee had, in our opinion, overlooked when exhibited at Vincent Square. *Kelway & Son.*

A National Daffodil Society.—In 1910 considerable discussion took place in some of the gardening papers as to the desirability of forming a National Daffodil Society, but although the suggestion met with very general approval, nothing was effected. In venturing once more to raise the question, I should like to advance a few reasons why such a society is desirable. (1) The Daffodil holds the undoubted position of Queen of the Spring flowers. (2) The R.H.S. Narcissus Committee has neither the time nor the power to advance the interests of the flower as its merits deserve. (3) The R.H.S. Classification List, good though it is, requires revision now, and the constant introduction of new varieties calls for its annual revision. (4) It is desirable that special standards be laid down for the flowers in each class. These would be of assistance to the seedling raiser as well as to the judges of show flowers. (5) Special rules are required for judges at Daffodil shows. (6) An annual report giving, "inter alia," lists of good garden varieties and describing the best novelties of the year would be of value. (7) Investigation of insect pests and diseases is required. I hope that it may be found possible to hold a conference on the question during the forthcoming Daffodil season, and that those "in authority" in the Daffodil world will take the matter in hand. *C. E. Kitchin.*

Hybrid Nomenclature.—Mr. Rolfe (see p. 475) proves my point, which is that many Orchid names are abominable. I believe I possess average intelligence, yet I am unable to get the hang of them, and I rather fancy that even editors of horticultural journals find them puzzling and difficult. Botanists delight in wrangles over rules of nomenclature, and it is remarkable how they love to display their knowledge of Latin and Greek, regardless of the trouble they cause to less erudite folk, and of the advice that plant names should be "easy to write, read and speak." They go their own way in their own field; then why should not gardeners in theirs, as they do already with respect to the names of garden plants except Orchids? Reasonable names for the plants we grow and talk about almost daily is surely not too much to ask. My little dog was named Nebuchadnezzar, but my children insisted that Neb was long enough. I once heard Cattleya Skinneri reduced to catskin. We do not speak of Fuchsia macrostemma var. Lord Roberts, nor of Pelargonium zonale tricolor Mrs. Pollock. The bi, tri, poly generic names are the unpardonable sin, and when Mr. Rolfe, or any other person, advances a commonsense reason against their being "mopped off," I and my kind may leave off objecting to them on the ground that they are ridiculous in horticulture. *W. W.*

A Candid Opinion (see p. 470, vol. lii).—As an example of a scientist not accepting a popular belief, my father, when he went to Hitcham Rectory, Suffolk, found that the farmers were fully convinced that the Barberry, or "Piprage" as they called it, did rust the wheat. He knew the Æcidium Berberidis to be a very different form from that of rubigo, and so opposed the farmers, who, of course, knew nothing of fungi. He discovered the fact that the mildew (Puccinia) was a later production of the rust, but he did not then know that its spores ultimately found their way to the Barberry. A farmer living near Tewkesbury (about the year 1860) told me he could trace the red rust spreading from one corner of a field to the opposite one, but when he cut down the offending bush and burnt it he had no more rust in that field. *George Henslow.* [This was a common belief held by farmers, as numerous instances cited by Plowright in the *British Uredineæ and Ustilagineæ* prove. He states, p. 47:—"With regard to the fact that the Barberry in some way favours the growth of mildew upon wheat, there is no doubt that it was well known to practical farmers during the 18th century, for we find in America, as early as 1760, in the State of Massachusetts, an Act was passed by the legislature compelling the inhabitants to extirpate all Barberry bushes." In our own country, especially in Norfolk, this belief also existed, for we find Marshall, writing in 1781, says, "It has long been considered as one of the first vulgar errors among husbandmen that the Barberry plant has a pernicious quality (or rather a mysterious power) of blighting Wheat which grows near it." Marshall continues: "This idea, whether it be erroneous or founded on fact, is nowhere more strongly rooted than among the Norfolk farmers; one of whom mentioning, with a serious countenance, an instance of this malady, I very fashionably laughed at him. He, however, stood firm, and persisted in his being in the right, intimating that, so far from being led from the cause to the effect, he was, in the reverse, led from the effect to the cause; for, observing a stripe of blasted Wheat across his close, he traced it back to the hedge, thinking there to have found the enemy; but, being disappointed, he crossed the lane into a garden on the opposite side of it, where he found a large Barberry bush in the direction in which he had looked for it. The mischief, according to his description, stretched away from this point across the field of Wheat, growing broader and fainter (like the tail of a comet) the further it proceeded from its course. The effect was carried to a greater distance than he had ever observed it before, owing, as he believed, to an opening in the orchard behind it to the south-west, forming a gut or channel for the wind. But the true cause was not known to the farmers; some affirmed that the Barberry bush exhaled a noxious effluvium; others, that the pollen of its flowers poisoned the Wheat; others, again, that it appropriated to itself all the nourishment from the soil in its vicinity." In 1805 Sir Joseph Banks pointed out the resemblance of the yellow fungus on Barberry to rust. He says: "Is it not more than possible that the parasitic fungus of the Barberry and that of Wheat are one and the same species, and that the seed is transferred from the Barberry to the corn?" It remains to be stated that the true connection between the Barberry Æcidium and the Wheat mildew was discovered by a Danish schoolmaster who lived in the village of Hammel, near Aarhus, in Jutland, at the beginning of the last century.—Eds.]

Wheat Experiments.—The note (page 487 vol. lii) on the experiments carried out at the Albert Agricultural College, Glasnevin, is interesting to Wheat growers, including many gardeners who grow a small patch of Corn. But the report contains a serious omission, for no mention is made of the "strength" of the Wheat, which denotes the quality, for Wheat may be either weak or strong. Wheat is said to be "weak" when the endosperm or floury part of the grain is white and opaque, appearing like chalk when cut across. Grains with such starchy contents are usually soft and generally yield flour which makes a somewhat small loaf of dense texture. In "strong" Wheats the endosperm is frequently hard and translucent, resembling horn or flint when cut across; the flour from such Wheat yields loaves which are comparatively large and spongy in texture. Many hundreds of varieties of Wheat are cultivated in different parts of the world. In this country they are becoming much too numerous by the addition of French, Danish, American and other varieties. Few of these foreign Wheats are of value in England to the ordinary farmer; although they may yield an extra bushel, that is not an equivalent to the loss in strength. Some years ago I made experiments with Canadian Red Fife Wheat. I planted six acres, but one year's trial in a good Wheat season proved the superior value of a good English variety as compared with the Canadian sort. Since that time I have grown French varieties, not with any idea of success, because I knew beforehand the "weak" condition of all varieties I had seen would be detrimental. To prove their value, I planted for trial several acres, and the result was as I expected. The Straw, too, was not equal to that of an English variety, which, to the farmer, is an important item. In this part of Hampshire, which is a good Wheat-growing district, many farmers tried the French and other new Wheats, but I do not know of a single instance of any being sown this autumn. As a rule, the ordinary farmer grows but one variety, and the best is, in my opinion, Webb's Red Standard, which produces from 40 to 48 bushels per acre, with a weight per bushel in a good season of 64 lbs. to 66 lbs. This is known as "strong" Wheat, and is favoured by millers. Squarehead's Master is another variety popular with many farmers. I cannot detect any difference in these two varieties. *E. Molyneux, Swanmore Park Estate, Bishop's Waltham.*

Ripened Wood (see p. 488, vol lii.)—I have long been of the opinion that too much importance is attached to wood ripening. We are always reminded by writers on the subject of the necessity of thoroughly ripened wood in stone fruit trees, yet the Morello Cherry, growing on north walls where the sun does not shine, bears crops more regularly than any other stone fruit. The Currant and Gooseberry will bear fruit equally well on a north wall as in the most favoured situation. I have noticed that in seasons when the conditions for wood-ripening have been unfavourable there has been a promising show of fruit the following spring. *W. P. R.*

Late Peas (see p. 488, vol. lii).—We gathered well-filled pods of Centenary Pea as late as December 12. The row was about 60 feet long. The seeds were sown during July in the ordinary way—not in trenches—in an open part of the garden exposed to the east. *F. Wickens, Binstead House Gardens, Ryde, Isle of Wight.*

"PROGRESS OF HUSBANDRY" (see p. 490, vol. lii.).—The notes of books given by Mr. Middleton are slightly incomplete. Thus the best edition of *The Countrie Farme* is that of 1616, which is considerably augmented by the Editor, Gervase Markham, who published several books on rural economy. *Adam Out of Eden* first appeared in 1626, though I have only seen the later 1658 reprint. There are other slight matters, but it is surely a great oversight that no notice is taken of a remarkable book on Scottish agriculture which was published anonymously in 1729 with the title of *An Essay of Ways and Means for Enclosing*, &c. It is now known to have been written by Macintosh of Borlum, and besides ventilating the views which he more particularly desired to propagate, he gives luminous sketches of the condition of the country, of the manners of the different classes of society, and the prevailing economic principles when he was one of the earliest, if not the first, to denounce as subversive of all real progress, and which persons still living have seen the last of in their lifetime. Among other improvements he desired to see was the teaching of agriculture or "a right establish'd College of Agriculture" in the universities, Government subsidies, the planting of fruit trees in hedge rows, once the hedges were planted, of which at that period there were very few. And in connection with the supply of fruit, it is noteworthy that quantities were imported from the Continent, the cost of which he wished to see saved to the country. He mentions "shipfuls of bad Apples from Holland and Normandy," and as a stimulus to further progress, he notes how "it is not so many years since we believed Apricots, Peaches or Grapes would do on our walls in Scotland," and he mentions varieties of Apples as fine as he ever saw "in England except the Golden Pippin, which is not so large." Farming, it may be said, was at a very low ebb. Macintosh himself cultivated Turnips for winter feeding, though, probably, almost certainly, they were grown broadcast and not in drills. To secure the tenant a return for improvements, he advocated a 19 years lease, which afterwards became the custom of the country. *R. P. B.*

SOCIETIES.

CHELMSFORD AND DISTRICT GARDENERS'.

DECEMBER 13.—The fifth meeting of the winter session of this society was held in the Institute of Agriculture on the above date. Mr. H. Brown occupied the chair.

Iris stylosa was shown well by Mr. TURNER, gardener at Boreham House.

Mr. Simmons, gardener at The Elms, Chelmsford, gave a lecture on "Hardy Perennials."

Dealing with the preparation of the border, the lecturer advised deep digging and liberal manuring. He recommended planting in groups and masses, arranging the colours to blend with due regard to the date of flowering.

The proper methods of staking, mulching, and watering were explained by Mr. Simmons.

LINNEAN.

DECEMBER 19.—At the meeting held on this date Mr. Cecil H. Hooper gave an account entitled "Experiments on the Pollination of our Hardy Fruits, with observations on the Insect visitors to the blossoms," illustrating the same with lantern slides. He stated that Strawberries, provided there is wind, set fruit well without insects. Raspberries and Loganberries generally set fruit imperfect in shape if insects are excluded. Red, White and Black Currants and Gooseberries, owing to the construction of their flowers and pollen (which is glutinous), cannot be pollinated and set their fruit without the visits of insects, more particularly hive and bumble bees. All the previously-mentioned plants set fruit perfectly with pollen of the same variety or even of the same flower; but in the case of the Apple, Pear, Plum, and Cherry this is not always the case, many varieties being self-sterile, and almost all produce more abundant and finer fruit with pollen of another variety. In these trees there is very little transference of pollen by the wind, and even if a self-fertile tree is enclosed in muslin whilst in blossom (there being ample movement of the wind, insects only being excluded), it is the exception for any fruit to set; it is the same with Gooseberries and Currants. In trials with Apples, only 19 varieties out of 65 proved self-fertile; in Pears, 4 out of 30; in Plums, 21 out of 41; in Cherries, 5 out of 12: whilst, when cross-pollinated, in three-quarters of the trials one or more fruits set on a truss.

There seems to be a preference as to pollen, some varieties setting better with pollen of one variety than of that of another; and some varieties will not set with certain pollen. The knowledge of the usual order of blossoming is useful as a guide for interplanting varieties, so as to choose varieties that flower about the same time for planting together.

Out of nearly 3,000 insects observed in the spring of 1912 visiting the blossoms of the various fruit bushes and trees, 88 per cent. were hive-bees, 5½ per cent. bumble and other wild bees, and 6½ per cent. flies, ants, beetles, wasps, and other insects; but the latter group have not fluffy bodies for carrying and transferring pollen, and chiefly amuse themselves eating the pollen, and are not therefore proportionately as useful as the hive and wild bees.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

DECEMBER 19.—*Committee present:* Rev. J. Crombleholme (in the Chair); Messrs. R. Ashworth, J. Cypher, J. Evans, J. Lupton, D. McLeod, C. Parker, H. Thorp, Z. A. Ward, A. Warburton and H. Arthur (secretary).

Large Silver Medals were awarded to Z. A. WARD, Esq., Northenden (gr. Mr. Weatherby), for a group of Odontoglossums; A. WARBURTON, Esq., Haslingden (gr. Mr. Dalgleish), and Col. J. RUTHERFORD, M.P., Blackburn (gr. Mr. Lupton), for Odontoglossums in variety.

Silver Medals to R. ASHWORTH, Esq., Newchurch (gr. Mr. Gilden), for a mixed group; F. A. HINDLEY, Esq., Great Horton, for a group composed principally of Cypripediums; G. H. Peace, Esq., Monton Grange (gr. Mr. Mace), for a group of Cypripediums in variety; Messrs. J. CYPHER & SONS, Cheltenham, for a group of Cypripediums; and Messrs. A. J. KEELING & SONS, Bradford, for a mixed group.

Bronze Medals to Rev. J. CROMBLEHOLME, Clayton-le-Moors (gr. Mr. Marshall), for Cypripediums, and H. ARTHUR, Esq., Blackburn, for a small group.

Other exhibitors were O. O. WRIGLEY, Esq., who was accorded a special vote of thanks for his exhibits; W. R. LEE, Esq., Heywood (gr. Mr. Branch), and J. H. CRAVEN, Esq., Keighley (gr. Mr. Corney).

AWARDS.

FIRST-CLASS CERTIFICATE.

Cypripedium Goliath (Amy Moore × *Harefield Hall)*, from W. R. LEE, Esq.

AWARDS OF MERIT.

Cypripedium Fouldsianum (Fascinator × *Clinkaberryanum)*, from J. H. CRAVEN, Esq.

Odontoglossum Wilkieanum var., from Z. A. WARD, Esq.

Lælio-Cattleya Goldfinch "Ashlands" var. (L.-C. Warnhamense × *aurea)*, from R. ASHWORTH, Esq.

Cymbidium Woodlandense (Traceyanum × *Mastersii)*, from H. ARTHUR, Esq.

GLASGOW SEED TRADE.

DECEMBER 21.—The annual dinner of the Glasgow Seed and Nursery Trade Association was held on this date in Ferguson and Forrester's Restaurant, Buchanan Street. Mr. William Williamson, hon. president, occupied the chair.

Mr. James Cameron, in giving the toast of "The Seed and Nursery Trade," spoke of the progress which had been made by the trade during the past 30 or 40 years, and referred to the proposal to establish a seed-testing station in Edinburgh. With regard to the future of their trade he thought that all those who were engaged in it would need to be more scientific as the years went on. A man who specialised in farm seeds must know something of the farm itself and of the conditions in which the seeds were grown.

The Chairman, in responding, referred to proposed legislation affecting the trade. Strong appeals had been made to the powers that be in order that the proposals in this connection might be put on a fair and right basis, and they were hopeful that the legislation would prove satisfactory not only for the buyer but for the seller, and that the seedsman would be put on an equality with the farmer.

SUSPENSION OF A HORTICULTURAL SOCIETY.

THE Haddo House Society, which has held flower shows for several years in the grounds of Haddo House, Aberdeenshire, has been suspended for the present. A sum of money standing to the credit of the society has been banked and will be held in reserve until such time as the society is operative again.

Obituary.

WILLIAM WHITELAW.—We regret to record the death of Mr. William Whitelaw, which took place on Christmas Eve at the age of 77. Mr. Whitelaw was a native of Coulston, Haddingtonshire, and served his apprenticeship in gardening at Whittinghame. He was afterwards employed in the gardens at Scone Palace and Ardgowan. Later he was gardener at Blairquhan Castle, Ayrshire, where he remained about three years, leaving to take up fresh duties at Applecross, in Argyleshire, where he remained about 15 years. He was next appointed gardener at Nostell Priory, in Yorkshire, where he remained three years. Later he entered the service of Lord Grimthorpe at Batchwood, where he remained for 32 years. When Batchwood was sold last spring, Mr. Whitelaw retired from active service and has since resided at Sandridge, near St. Albans. The funeral took place on the 30th ult. He leaves a widow, a son and a daughter.

DR. BRUCKHOUT.—We learn from *Nature* of the death from heart disease of Dr. William A. Bruckhout, Professor of Botany in the Pennsylvania State College. Dr. Bruckhout, who was born in 1846, graduated in the State College, and was appointed in 1871 professor of botany and horticulture in that institution. Dr. Bruckhout also occupied for many years the post of botanist to the Pennsylvania State Board of Agriculture. He took a great interest in forestry, and was a member of the Pennsylvania State Forestry Commission. Dr. Bruckhout's investigations had a practical trend, and among the subjects on which he wrote are the effects of smoke and gas on vegetation, the food value of the Chestnut, the microscopic flora and fauna of the State College water supply, and forest fires.

JOHN MCGREGOR.—We regret to announce the death of Mr. John McGregor, gardener at Barochan, Houston, for the past 55 years. He served the present proprietor of Barochan, Sir Chas. Bine Renshaw, Bart., for 30 years. During the 'seventies and 'eighties, Mr. McGregor was a successful exhibitor at the leading shows. Five years ago he partially retired from his duties, when Sir Chas. and Lady Bine Renshaw made him a presentation, whilst a gold watch was subscribed for by his friends and the employés on the estate. Mr. McGregor leaves four sons and two daughters. Two of the sons are well-known gardeners.

ISAAC HUSBANDS. — The *American Florist* records the death of Mr. Isaac Husbands, florist at Bellevue, Ohio, U.S.A., on November 23. Mr. Husbands was a native of England, and settled in America soon after he had commenced his gardening career. He was at one time gardener to a gentleman at Cleveland.

WALTER HART.—The death of this florist is also recorded by *The American Florist*. Mr. Hart was born in England, but settled in America with his parents when quite young. He was a prominent florist at Pontiac, Illinois, U.S.A., and is described as one of the town's best-known citizens.

MARKETS.

COVENT GARDEN, January 1.

[We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general averages for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—EDS.]

Cut Flowers, &c.: Average Wholesale Prices.

	s.d.	s.d.
Arums (Richardias)	2 6-	4 0
Azalea, per dozen bunches ...	4 -0	5 0
Bouvardia, per dz. bunches ...	6 0-	7 0
— white and coloured ...	6 0 -8	0
Camellias, white, per dozen ...	1 6-	2 0
Carnations, per dozen blooms, best American varieties ...	1 9-	2 6
— smaller, per doz. bunches	15 0-18	0
— Carola (crimson), extra large	4 0-	5 0
— Malmaison, p. doz. blooms:		
— — pink ...	12 0-15	0
Chrysanthemums, per dozen:		
— white	2 0-	4 0
— pink	2 0-	4 0
— yellow... ...	1 6-	3 0
— bronze... ...	2 0-	4 0
— white, per doz. bunches ...	12 0-18	0
— coloured ...	12 0-18	0
Daffodils, per doz. bunches	7 0-	8 0
Eucharis, per dozen	2 6-	3 0
Freesia, white, per doz. bunches...	2 6-	3 0
Gardenias, per box of 15 and 18 blooms ...	5 0-	7 0
Gerbera Hybrid, p. doz.	2 6	—
Hyacinth Roman, per dz. bnchs.	15 0-18	0
Lilium auratum, per bunch ...	2 6-	3 0
— longiflorum, per doz., long	2 6-	3 0
— — short ...	2 0-	2 6
Lilium lancifolium		
— alba, long ...	2 0-	2 6
— short	1 6-	2 0
— speciosum rubrum, per dz.:		
— long	2 0-	2 6
— short	1 0-	1 3
Lily of the Valley, pr. dz. bnchs.:		
— extra special ...	12 0-18	0
Lily of the Valley, p. doz. bnchs:		
— special... ...	10 0-12	0
— ordinary ...	8 0-	9 0
Mignonette, per doz. bunches...	3 0-	4 0
Orchids, Cattleya, per doz. ...	15 0	—
— Cypripedium	2 0-	3 0
— Odontoglossum crispum ...	4 0-	5 0
Pelargoniums, p. dz. bunches	4 0-	5 0
— Double Scarlet	9 0-10	0
Poinsettias, per dozen blooms	9 0-10	0
Roses, 12 blooms:		
— Liberty ...	5 0-	8 0
— Madame A. Chatenay ...	5 0-	8 0
— Niphetos ...	2 0-	2 6
— Richmond ...	5 0-	6 0
Spiræa (Astilbe) japonica, per dz. bunches ...	6 0-	8 0
Tuberose, p. doz. blooms, long...	1 0-	1 3
— — short ...	0 8-	0 9
Tulips, per dozen bunches:		
— red	8 0-	9 0
— white	9 0-10	0
— yellow... ...	8 0-	9 0
— bronze... ...	9 0-10	0
— pink	10 0-18	0
Violets, Princess of Wales, per dozen bunches	2 0-	3 0

Guernsey Flowers: Average Wholesale Prices.

	s.d.	s.d.
Narcissus:		
— Soleil d'Or ...	4 0-	4 6
— Grand Primo	3 0-	3 6
— Princeps ...	3 0-	4 0
Narcissus:		
— Henry Irving...	4 0-	5 0
— Gloriosa ...	2 6-	3 0

French Flowers: Average Wholesale Prices.

	s.d.	s.d.
Anemone, double pink, per doz.	2 6-	3 0
Lilac, white, per bunch	3 6-	4 0
— mauve... ...	4 0-	6 0
Marguerite, yellow, per doz. bnchs	2 6-	3 0
Mimosa, pr. bunch	0 9-	1 0
Narcissus, Paper White, pr. pad, 48 bunches ...	8 0-10	0
— Soleil d'Or, p.dz.	2 0-	3 6
Ranunculus, per doz. bunches:		
— double scarlet	8 0-12	0
— yellow... ...	8 0-12	0
— bronze... ...	10 0-12	0
— carmine ...	5 0-	6 0
Roses, Safrano, pkts. of 24 blms.	3 6	—
Violets, per pad of 48 and 60 bchs.	4 0-	5 0
— Parma, large bunches, each	4 6-	5 0

Cut Foliage, &c.: Average Wholesale Prices.

	s.d.	s.d.
Adiantum Fern (Maidenhair), best, per doz. bunches ...	6 0-	7 0
Agrostis (Fairy Grass), per dz. bunches ...	2 0-	4 0
Asparagus plumosus, long trails, pr. ½ doz.	1 6-	2 0
— medium, doz. bunches ...	12 0-18	0
— Sprengeri ...	10 0 12	0
Berberis [illegible] per doz. bnchs	3 0-	4 0
Carnation foliage, doz. bunches...	3 0	—
Croton foliage, various, dz. bchs.	12 0-15	0
Cycas leaves, artificial, per doz.	3 0-12	0
Eulalia japonica, per bunch ...	1 0-	1 6
Moss, gross bnchs.	6 0	—
Myrtle, dz. bchs. (English), small-leaved...	6 0	—
— French ...	1 0	—
Smilax, per bunch of 6 trails ...	1 0-	1 3

Plants in Pots, &c.: Average Wholesale Prices.

	s.d.	s.d.
Azaleas, white and coloured, per dozen [illegible] ...	30 0-36	0
Azaleas [illegible] ...	6 0-	7 0
[illegible] ...	18 0-21	0
Asparagus plumosus nanus, per dozen... ...	10 0-12	0
— Sprengeri ...	5 0-	9 0
Aspidistra, p. dz., green	21 0-30	0
— variegated ...	30 0-60	0
[illegible]		
Lonicera, 48's, per dozen ...	9 0-12	0
[illegible]		
48's	10 0-15	0
Cineraria, p. doz.	9 0-10	0
Cocos Weddeliana, per dozen:		
— 60's	6 0-12	0
— larger, each ...	2 6-10	6
Croton, per dozen	18 0-30	0
Cyclamens, 48's ...	10 0 12	0
Cyperus alternifolius, p. dz.	5 0-	6 0
— laxus, per doz.	4 0-	5 0
Dracæna, green, per dozen ...	10 0-12	0
Erica hyemalis ...	12 0-15	0
— [illegible] ...	12 0 18	0
— — 60's ...	6 0-	8 0
— — 72's	3 0-	4 0
— gracilis 48's ...	12 0-15	0
— — in thumbs	3 6-	4 0
— — 60's ...	6 0-	8 0

Plants in Pots, &c.: Average Wholesale Prices (*Contd.*).

	s.d.	s.d.
Ferns, in thumbs, per 100... ...	8 0-12	0
— in small and large 60's ...	12 0-20	0
— in 48's, per doz.	6 0	—
Ferns, choicer sorts, per doz. ...	8 0-12	0
— in 32's, per dozen	10 0-18	0
Ficus elastica, per dozen	9 0-12	0
Genistas, per doz.	12 0	—
Geonoma gracilis, 60's, per dozen	6 0-	8 0
— larger, each ...	2 6-	7 6
Hyacinths, white, in pots, per dozen	12 0-15	0
Kentia Belmoreana, per dozen	5 0-42	0
— Fosteriana, 60's, per dozen	4 0-	6 0
— — larger, per dozen	18 0-63	0
Latania borbonica, per dozen ...	12 0-30	0
Lilium lancifolium rubrum in pts., per dozen ...	18 0-21	0
Lilium lancifolium alba, in pots., dozen	18 0-21	0
Lilium longiflorum, per dozen ...	18 0-30	0
Lily of the Valley	18 0-21	0
Marguerites, in 48's, per doz., white	8 0-10	0
Pandanus Veitchii, per dozen ...	36 0-48	0
Pelargonium (Geranium), double scarlet, 48's ...	4 0-	5 0
— other varieties	5 0-	6 0
Phœnix rupicola, each	2 6-21	0
Poinsettias, per dozen pots, 48's	10 0-12	0
— 60's	6 0	—
Solanum, 48's, per dozen	8 0-12	0
Spiræa japonica, per dozen pots	6 0-	8 0
— pink	10 0-12	0
Tulips, per box of 24's;		
— white	2 6-	3 0
— pink	2 6-	3 0
— scarlet (Tulips or Bulbs) ...	2 6-	3 0

Fruit: Average Wholesale Prices.

	s.d.	s.d.
Apples:		
— Dessert, English, ¼ bushel	2 0-	4 0
— Cox's Orange, ½ bushel ...	6 0-10	0
— Cooking, per bushel	2 0-	4 0
— Wenatchee, p. case	7 0-	9 0
— American, brls.	27 0-30	0
— Californian Newtowns, case	7 0-	8 0
— Nova Scotian, per barrel ...	13 0-16	0
— Oregon, Newtown Pipp., cs.	8 0-10	0
Bananas, bunch:		
— Doubles ...	10 0-12	0
— No. 1	7 0-	8 0
— Extra	8-6-10	0
— Giant	12 0-14	0
— Loose, p. doz.	0 6-	1 0
— Red coloured...	4 6-	5 6
— Jamaica, per ton	£10-	£12
— Jamaica Ordinary, per box (9 doz.) ...	4 0-	5 6
Dates, per dozen...	2 9-	3 0
— Egyptian, per cwt.	25 0	—
Figs (Italian), bxs.	0 6-	1 0
Cranberries, per case	9 0-14	0
Grape Fruit, case:		
— 96's		
— 80's	8 0-18	0
— 64's		
— 54's		
— per dozen ...	4 0-	6 0
Grapes (English), per lb.:		
— Canon Hall ...	3 6-10	0
— Muscat of Alexandria ...	3 6-10	0
— Black Alicante	0 6-	1 6
— Almeria, barrel	12 0-18	0
— Gros Colman	0 8-	2 6
— Lisbon, case...	7 0-	8 6
Lemons, per case:		
— Malaga ...	16 0	—
— Messina, per case ...	8 6-24	0
Nuts, Almonds, per bag	52 6	—
— Brazils, cwt....	54 0-62	0
— Spanish, per sack	40 0-42	0
— Barcelona, per bag	35 6-36	6
— Cocoanuts, 100	18 0-23	0
— English Cobs per lb.... ...	0 3-	0 4
— Chestnuts, bg.	14 0-26	0
— Walnuts French, per cwt.	30 0	—
— Naples, p. cwt.	64 0	—
Lychees, 1lb. box...	1 6	—
Oranges:		
— Jaffa, per case	6 6-	7 6
— Jamaica, case	4 0-	8 0
— Mandarines, p. box	0 8-	5 6
— Florida Tangerines, p. case	14 0-16	0
— Denia, per case	11 0-22	0
— Californian, Seedless, case	10 0-12	0
Pears:		
— French, per box	3 0	—
— — per crate ...	6 0-	8 0
— Californian Doyenné du Comice, p. case	12 0-16	0
— French Doyenné du Comice per crate ...	5 6-	6 6
— Dutch Catillac, ½ bushel ...	3 6	—
— American, per barrel	7 0-	8 0
Pineapples, St. Michael ...	3 0-	5 0
Rhubarb, dozen bundles ...	1 2-	1 6

Vegetables: Average Wholesale Prices.

	s.d.	s.d.
Asparagus, Paris green	4 3-	4 6
Sprue, per bundle	0 8	—
Artichokes (Globe), per dozen ...	2 6-	3 0
— French ...	2 0-	2 6
— ground, ½ bus.	1 0	—
— Batavia, p. dz.	0 6	—
— — French, doz.	1 0	—
Beans:		
— French, p. pkt.	0 4-	0 5
— Guernsey, lb.	0 9-	1 0
— Madeira, per handle	2 6-	3 0
Beetroot, p. bushel	1 6	—
Cabbages, p. tally	2 6	—
— boxes	1 0-	2 0
— red, per dozen	1 0	—
Carrots (English), pr. doz. bun....	1 6-	2 6
— dirty, per bag...	2 6	—
— washed, bag ...	3 0	—
Cauliflowers, per tally	7 0-10	0
— boxes	2 3-	4 6
— Cornish, crate	3 6-	4 0
— Italian, crate...	2 9	—
Celery, per dozen "fans"	12 0	—
— dirty	9 0	—
Celeriac, per doz.	1 0-	1 6
— French, per dozen	2 6	—
Cucumbers, p. flat	7 0-	9 0
Endive, per dozen	0 6	—
French p. doz.	1 0	—
Greens, per bushel	1 0	—
— bags	1 6	—
Herbs, packets., per gross	10 0	—
Horseradish, 12 bundles ...	12 0	—
Leeks, per doz. ...	1 6-	2 0
Lettuce (English), Cabbage, per bushel ...	1 6-	2 0
Lettuce, French, per crate ...	3 0	—
Mint, per dozen bunches ...	3 0	—
Mushrooms, cultivated, per lb.	0 10-	1 0
Mustard and Cress, per doz. punnets	0 4-	0 6
Onions (English) per bag ...	3 6	—
— per bushel ...	2 0	—
— picklers, per bag	4 0	—
— (spring), per doz. bunches	2 0	—
— (Spanish), case	4 6	5 6
— Dutch, bags ...	2 6	—
— Guernsey, p. lb	2 0	—
Peas, French, pad of 10 lb. ...	5 0	—
Parsley, per doz. bunches ...	2 0	—
Parsnips, per bag	2 0	—
— per bushel ...	1 0	—
Radishes (English) per dozen ...	0 10-	1 0
Sage, per dozen ...	2 0	—
Savoys, per tally	4 0	—
— per [illegible] ...	2 0	—
Seakale, punnets...	1 0-	1 6
Spinach, ½ bushel	2 6-	3 0
[illegible]	1 0	1 3
— bags	1 6-	2 0
Scotch Kale, bush.	1 0	—
Turnips, unwashed, bag ...	2 0	—
Turnip tops, bushel	1 0-	1 6
— per bag ...	2 6	—
Watercress, p. dz. bunches ...	0 4-	0 6

Vegetables: Average Wholesale Prices (*Contd.*).

	s.d.	s.d.
Tomatos, Canary, per bundle ...	9 0-13	0
Thyme, dz. bnchs.	2 0	—
Turnips (English), per dz. bunches	1 3-	2 6
— per bag	2 0-	2 6

REMARKS.—The following varieties of English culinary and dessert Apples are available:—Bramley's Seedling, Dumelow's Seedling (Wellington) and Cox's Orange Pippin. Apples from Nova Scotia consist of the following sorts;—King of the Pippins, Baldwin, Fallowater, Ribston Pippin, and Golden Russet. Imported Apples in boxes include Yellow Newtown Pippin, Wenatchee, Oregon Newtown Pippin, Jonathan Wine Sap and Spitzenberg as the leading varieties. Varieties of Pears now obtainable are Winter Nelis, Doyenné du Comice and Keiffer. The market is well supplied with Black Alicante and Gros Colman Grapes. Supplies of Muscat varieties are becoming fewer. Trade in Cob-nuts remain steady at from 3s. to 4s. per 12 lbs. Oranges have been a full supply; the principal varieties are Denia, Valencia, Murcia, Jaffa, Jamaica, Californian Seedless and Tangerine. Teneriffe Tomatos continue a good supply. Mushrooms are abundant and cheap. Supplies of English and French Asparagus are increasing. The supply of Cucumbers is limited. Consignments of Dwarf Beans are about equal to the demand. Forced Rhubarb is plentiful. The commoner vegetables are all abundant. *E. H. R., Covent Garden, January 1, 1913.*

Potatos.

	per cwt. s.d.	s.d.		per bag. s.d.	s.d.
Bedfords	4 0-	4 6	Dutch	2 9-	3 6
Kents	4 0-	5 0	Belgian	3 0-	3 9
Blacklands ...	3 6-	3 9	German	3 9-	4 9
Lincolns	3 6-	5 0	Dunbars	6 0-	6 3
King Edward ...	4 0-	4 9	Scotch (grey soil)	4 0-	4 9

REMARKS.—The conditions of trade and prices remain the same as last week. *Edward J. Newborn, Covent Garden and St. Pancras, January 1, 1913.*

CLOVER AND GRASS SEEDS.

English Red Clover.—A short crop of medium quality is reported, and the samples already marketed are of low grade. There are still some high-grade seeds of 1911 harvest available, which meet a steady demand at full figures.

Single Cut Cowgrass.—A short crop of poor quality.

Foreign Red Clover.—France reports no supplies from north, east and west, and only an average quantity from the centre and south, practically all of which has been sold. Italy had a good harvest of a quality which has found ready buyers in all districts. There is a very short yield in Austria, quality mostly weathered. Russia a short crop. America and Canada are expected to have little, if any, surplus for export, but their crops are large enough to prevent importations to any extent from this side. Chilian supplies are smaller than last season. In our opinion present prices are reasonable.

White Clover.—The English crop is smaller than for many years. The Continental seed is below average as to quality, although rather better than last year. Early American orders have made a great clearance, and prices advanced rapidly to a figure not approached during 1911, and it is expected present values will be maintained.

Alsike.—English crop very short and of low quality. Small supplies reported in Canada and the States, and values are higher than usual.

Trefoil.—A short crop of useful quality in England; moderate supplies expected from France and Belgium. Prices will rule high.

Lucerne.—Very small supplies from Provence and a normal yield in Turkestan; some seed of useful quality has been saved in Italy.

Sainfoin.—A fair crop of the common English variety. A short crop of Giant variety of medium quality. Small supplies from France.

Italian Ryegrass.—Less than an average crop of ordinary quality has been saved in Ireland. A fair crop of useful quality in England and France.

Perennial Ryegrass.—A smaller crop than last year, and the quality is of much lighter weight per bushel than usual.

Natural Grasses.—Of Cocksfoot, a large crop of very good quality has been harvested in Denmark and Germany. Hard and Sheep's Fescue are rather scarce, and Poa Trivialis is a short yield. Foxtail Meadow Fescue, Poa pratensis and Timothy grass are being offered at normal rates.

Mustard.—An average crop of good quality.

Rape.—Supplies from all districts are extremely short.

Spring Tares.—A moderate crop of good quality.

Hurst & Son, January 1, 1913.

DEBATING SOCIETIES.

WATFORD HORTICULTURAL. The annual general meeting of this society was held in the Church Room, St. Andrew's, on December 20, the Hon. Treasurer (Mr. E. S. Theobald) occupying the chair. The attendance was the best ever held under the auspices of the Society, but, owing to the unusual weather, the receipts were very low. The financial account shows a balance of [illegible] in favour of the society. The resignation by Mr. H. Newman of the office of Hon. Secretary was received with regret; his successor is Mr. W. Waterton. The other officers and committee were also elected.

DUMFRIESSHIRE AND GALLOWAY GARDENERS'.—At a meeting held in Dumfries on the 2nd inst. an association was formed under the above name for the reading and discussion of papers on horticultural and allied subjects. Mr. J. Hutchison, Terregles Gardens, occupied the chair. The first meeting of the session will be held on January 11, when a paper will be read by Mr. S. Arnott.

THE WEATHER.

THE WEATHER IN WEST HERTS.

Week ending December 25, 1912.

The third warm week in succession.—For nearly three weeks there has not occurred a single unseasonably cold day or night. During that period the highest reading in the thermometer screen has on as many as 15 days risen to or exceeded 50°, and on the warmest of those days reached 55°, which is 11° higher than the average for the time of year. At 2 feet deep the ground is now 3° warmer, and at 1 foot deep 4° warmer than is seasonable. Rain fell on four days, to the total depth of about ¾ inch. Shortly before 3 o'clock on the afternoon of the 24th rain was falling for five minutes at the mean rate of 1½ inch an hour. During the week two-and-a-half gallons of rainwater has come through the bare soil percolation gauge, and two gallons through the gauge on which short grass is growing. The sun shone on an average for 23 minutes a day, which is 54 minutes a day short of the usual duration at this period in December. The winds proved variable in strength, but in no hour did the mean velocity exceed 15 miles. The average amount of moisture in the air at 3 p.m. fell short of a seasonable quantity for that hour by two per cent. The Winter Aconite came first into flower in my garden in the spot selected for the observation of this plant on the 19th, which is 33 days earlier than its average date for the previous 26 years, and 18 days earlier than in the earliest of those years. *E. M., Berkhamsted, December 25, 1912.*

Week ending January 1, 1913.

The fourth unseasonably warm week in succession.—Another unusually warm week for the time of year, and the fourth warm week in succession. On the warmest day the temperature in the thermometer screen rose in the middle of the day to 55°, which is 12° higher than the average maximum reading for that day. On the warmest night the exposed thermometer never fell lower than 43°, which is also an unusually high minimum reading for the end of December. The ground is at the present time 4° warmer at 2 feet deep, and 5° warmer at 1 foot deep, than is seasonable. Rain fell on each of the six days ending the 28th ult., and to the total depth of 1¾ inch, which is equivalent to two-thirds of the average rainfall for the whole month. Since then there has been no rain worth mentioning. During those six days (or rather, during the six days ending the 29th ult.), 7¾ gallons of rainwater came through the bare soil percolation gauge, and 7¼ gallons through that on which short grass is growing. The sun shone on an average for 1 hour 11 minutes a day, which is 7 minutes a day short of the average for the last week in December. On the one bright day, the 30th ult., the sun was shining for 5 hours 10 minutes. The winds were, as a rule, rather high, and in the windiest hour the mean velocity rose to 20 miles—direction W. The direction of these winds was almost exclusively some point between S. and W. The average amount of moisture in the air at 3 o'clock in the afternoon exceeded a seasonable quantity for that hour by 1 per cent.

DECEMBER.

Wet, sunless, and windy, and remarkably warm.—This was with two exceptions the warmest December I have yet recorded here—that is during the last 27 years. But in the first of those two years the average temperature of December was only one-tenth of a degree higher, and in the other only two-tenths of a degree higher than that of the past month. On the warmest day the temperature in the thermometer screen rose to 55°, and on the coldest night the exposed thermometer registered 15° of frost. Three noteworthy features of this December as regards temperature were: (1) The greatest cold being recorded during the early morning hours of the first day of the month; (2) after the first five days there was not a single unseasonably cold day or night; and (3) there being eight consecutive days when the highest temperature only varied from 50° to 51°. Rain fell on 20 days, to the aggregate depth of 3¼ inches, which is half-an-inch in excess of the December average. Snow fell on two days, but at no time were there sufficient dry flakes to cover the ground. The sun shone on an average for 53 minutes a day, which is 18 minutes a day short of the mean duration for the month. The winds proved as a rule high, but in no hour did the mean velocity exceed 21 miles—direction S.W. In no hour was the direction any point between north and east. The average amount of moisture in the air at 3 p.m. fell short of a seasonable quantity for that hour by two per cent.

THE YEAR.

Rather warm, and singularly wet and sunless.—On the whole this was a rather warm year. There were six warm months—January, February, March, April, May and December; three of average temperature—June, July, and November, and three cold—August, September, and October. The most unseasonably cold months were August and September, and the most unseasonably warm one December. On the hottest day, July 15, the temperature in the thermometer screen rose to 87°, and on the coldest night, February 3, the exposed thermometer indicated 27° of frost. The total rainfall exceeded the average for the previous 56 years by 4¼ inches, making this the wettest year with one exception, 1903, for 30 years. The only really dry month was April, when virtually no rain at all was deposited. By far the wettest month was August, but in January and March the fall of rain was also unusually heavy. Taking the year as a whole the sun shone on an average for half an hour a day less than is usual, making this, with three exceptions, the most sunless year during the past 27 years. In fact, there were only two months, April and October, when the duration of sunshine was in excess of the average for the time of year. July and August were the most gloomy months, considering these are both summer months.

OUR UNDERGROUND WATER SUPPLY.

The total rainfall for the past three months has fallen short of the average for the same period in the previous 56 years by a quarter-of-an-inch, which is equivalent to a loss of 4,300 gallons on each acre on this district. Last year at the same time there was an excess of 90,480 gallons per acre. *E. M., Berkhamsted, January 1, 1913.*

CATALOGUES RECEIVED.

FOREIGN.

VILMORIN-ANDRIEUX ET CIE, 4, Quai de la Mégisserie, Paris—Trees and Shrubs.

M. LEENDERS & Co., Steil-Tegelen, Holland—New Roses.

WILHELM PFITZER, Stuttgart—Plant Novelties; Seeds.

GARDENING APPOINTMENTS.

[Correspondents are requested to write the names of persons and places as legibly as possible. No charge is made for these announcements, but if a small contribution is sent, to be placed in our collecting Box for the Gardeners' Orphan Fund, it will be thankfully received, and an acknowledgment made in these columns.]

Mr. W. W. HARRIS, previously Foreman at Nuttall Temple, Nottinghamshire, and Laverstoke House, Whitchurch, Hampshire, as Gardener to Sir GEORGE SMITH, Treliske, Truro, Cornwall.

Mr. JAMES PREECE, for 20 years Gardener at Warley Place, Great Warley, Essex, as Gardener to W. M. JACKSON, Esq., Leggatts, near Potters Bar.

Mr. JOHN BUDDEN, for the past 5 years Foreman at Bramham Park Gardens, Boston Spa, as Gardener to His Grace the Archbishop of YORK, Bishop Thorpe Palace, York.

Mr. J. G. QUINN, for the past 2 years Gardener to Captain R. B. BRASSEY, Copse Hill, Lower Slaughter, Gloucestershire, as Gardener to the same gentleman at Cottisbrooke Hall, Northampton.

Mr. G. GIBSON, for nearly 5 years General Foreman at Harewood House, Leeds, Yorkshire, as Gardener to C. WALKER, Esq., Brettargh Holt, Kendal, Westmorland.

TRADE NOTICE.

MESSRS. RYDER & SON, LTD.

THE above-named company has been registered with a capital of £35,000 in £1 shares (15,000 six per cent. Cumulative Preference). Business: To take over that carried on by Samuel Ryder & Son, at 27, Holywell-hill, St. Albans, and elsewhere, seed merchants and growers, bulb merchants, nurserymen, manufacturers of and dealers in horticultural sundries, &c. Private company. Office, 27, Holywell-hill, St. Albans.

*** *The Editors will be glad to receive, for consideration, large photographs of horticultural subjects, suitable for reproduction in this Journal.*

ERANTHEMUM: *F. C.* There is no insect present. The white speckled appearance is due to some inorganic substance which dissolves readily in a weak acid.

EUPHORBIA UNHEALTHY: *Anxious.* There is no trace of disease in the plant of Euphorbia. The trouble must be looked for in some wrong cultural treatment.

HELIOTROPES: *T. J.* The injury was caused in the case you cite by the fungus Phoma Heliotropii. Dip the plants in a rose-red solution of permanganate of potash or spray them with the same specific three times at intervals of three days.

LAWN TENNIS GROUND: *Taffy.* A tennis ground made by laying turf during December would not be sufficiently established to permit of the playing of regular games at the commencement of the following April. If this were done the future condition of the ground would be imperilled. By the second week in May the turf should have become well rooted, and play for a few hours daily could safely take place. We should not at any time care to convert our tennis lawn into a cycle track: the riding on a new lawn could certainly cause depressions. We cannot explain the presence of the number of stones which were found in the turf.

NAMES OF PLANTS: *T. Dent.* 1, Thuya occidentalis; 2, Libocedrus decurrens; 3, Abies Pinsapo; 4, Cupressus pisifera plumosa; 5, Juniperus virginiana; 6, Picea excelsa.—*A. J. M. S.* Ornithogalum lacteum.—*R. H.* Cœlogyne fuscescens.—*F. T. T.* 1, Oncidium cheirophorum; 2, Aërides odoratum; 3, Acriopsis javanica.—*E. L., Oxon.* The larger white flower is Ornithogalum lacteum, and the other Crassula albiflora.—*A. B., Lancaster.* 1, Maxillaria variabilis purpurea; 2, Lælia anceps.—*H. T.* 1, Oncidium flexuosum; 2, Brassia brachiata.—*X. Y. Z.* 1, Selaginella viticulosa; 2, S. plumosa; 3, S. uncinata; 4, Pandanus graminifolia; 5, Dracæna ferrea; 6, Carex riparia variegata.—*Stoke House.* 1, Coleus thyrsoideus (blue flowers); 2, Sparmannia africana (white flowers); 3, next week.

PALM LEAVES TURNING YELLOW: *Anxious.* The most common causes of Palm leaves losing colour are over-watering, the use of strong manures, keeping the plants in too low a temperature, and mutilation of the roots when repotting. It is not possible to induce the mature leaves which are now yellow to become green, but, by attention to correct cultural methods, the colour of the other leaves may be greatly improved, and those produced in future will be of normal colour. If, as you suspect, over-watering is the cause of the deterioration, the soil will probably be sour, and the plants will not greatly improve until they have been repotted, but it would not be advisable to do this until the early spring. When repotting, wash the roots free from old soil in a tub of lukewarm water, and carefully repot the plants into properly-drained pots, using three parts broken, fibrous loam, one part leaf-mould, and dried cow manure, with the addition of charcoal to keep the soil sweet, and plenty of coarse sand. Do not use peat in the potting compost, but for the Cocos Weddelliana increase the proportion of leaf-mould at the expense of the loam. The potting should be done very firmly, taking care to work the soil well around the roots and not to bruise any with the potting stick. After having been repotted, the Palms should be placed in a tropical temperature. Shade from direct sunshine is essential, and, for a time, water at the roots should be given with extra care, but established plants require copious watering during the growing season. The foliage should be syringed frequently. The Kentias mentioned (K. Balmoreana and K. Forsteriana) are capable of withstanding a considerable amount of rough treatment and make excellent room plants. During the summer and autumn these Palms may safely be grown in a cool conservatory provided that care in watering is exercised. The exceedingly graceful Cocus Weddelliana has a more delicate nature, and should not be allowed to remain in a low temperature longer than is really necessary, but in other respects this species is also a first-rate vase plant for the sitting-room. For the present all that can be done is to keep the Palms in a warm temperature and apply water carefully. Occasional waterings with dilute liquid manure made from cow dung or a solution of nitrate of soda will be beneficial.

PEAR AND APPLE SPOT: *J. M., Ireland.* Spraying with Bordeaux mixture should be commenced in the case of the Pears when the leaves are expanding, and should be continued at intervals until the fruit is half grown. It would be safe to treat Apples in the same way if they are also slightly attacked. The winter spray mentioned will serve for Apple and Pear trees alike..

RIGHT OF TENANT TO REMOVE PLANTS: *H. F. W.* The law on the subject is that anything planted or built in the soil must be left behind by the tenant, but those things which simply rest on the ground by reason of their own weight may be removed.

TARRING A PERGOLA: *Doubtful.* The Stockholm tar will not harm the Roses if they are not nailed directly on to the fence for the present. Tie the shoots in bunches, and secure them away from the woodwork. Next spring the injurious properties of the tar will have disappeared, and the Roses may then be trained in position. If the tar has been used so thickly on the pergola that it is still sticky in the spring, bind pieces of cloth round the woodwork where the branches are tied. Ultimately the cloth may be dispensed with.

TOMATO CHUTNEY: *E. Y.* The following recipe for making chutney from Green Tomatos was given in *Gardeners' Chronicle*, November 2, 1912, p. 336:—Take of green Tomatos 4 lbs., Apples and Onions 1½ lb. each.; sultanas, ½ lb., sugar ¾ lb., salt 1 ounce, and peppers and Chilies to taste. Slice the Tomatos, Apples and Onions and boil these with the other ingredients for four hours in 1½ pint of vinegar.

Communications Received.—R. E., Dolgelly (no letter enclosed with the specimens)—W. H. P.—J. F., Anxious—F. D.—Constant Reader—J. R. F.—M. C.—H. W.—W. B., Portarlington (your letter has been forwarded)—G. M. T.—M. C. A.—F. B.—J. B.—F. K., Bath—A. D.—Yorkshire Gardener—J. U. McC.—Nursery Employ, Torquay—E. P. P.—W. C.—Constant Reader—W. L.—H. S. T.—F. H.—C. H. A., Germany—H. G.—W. F.—E. M.—R. D.—W. R. D.—A. R. W.—W. F. B.—C. M.—J. L.—J. G. B.—F. W. O., Limpsfield—G. K.—G. B. M. R.—E. R. J.—O. T.—A Piper—W.—J. O'B.—A. S.

THE

Gardeners' Chronicle

No. 1,359.—SATURDAY, January 11, 1913.

CONTENTS.

Allamanda Hendersonii	24	Pine, the Corsican ...	28
Apple, honouring an ...	26	Plants in flower out-of-doors	28
Bamboo flower-pots ...	26	Plants, new or noteworthy—	
Benevolent Institution, Gardeners' Royal ...	25	Echium Wildpretii and other species... ...	19
Board of Agriculture, new secretary of the ...	25	Pterostyrax Henryi ...	19
Books, notices of—		Rhododendron ponticum var. aucubæfolium ...	27
The Planters' Note Book	26	Societies—	
Cabbage root fly, the ...	27	City of London Rose...	31
Cultural notes—		Ghent Agric.	26
The propagation of Statices	19	Perpetual-flowering Carnation ... 25,	30
Flowers, the pigments of	25	Royal Horticultural ...	29
Hamamelis mollis ...	27	Royal Meteorological...	25
Haricot, a new	25	Surveyors' Institution	25
Irises, some early-flowering	17	Suburban garden, the ...	24
Lindenbergia grandiflora	27	Trees and shrubs—	
Magistrates, Chester's new	21	Dwarf Conifers ...	21
Market fruit-garden, the	20	Sophora grandiflora ...	21
Novelties of 1912... ...	18	Week's work, the—	
Park, gift of a, to Dundee	26	Flower garden, the ...	22
Pine seeds, method of extracting	26	French garden, the ...	23
Plant notes—		Fruits under glass ...	23
Abutilon insigne ...	26	Hardy fruit garden ...	23
Centropogon Lucyanus	26	Kitchen garden, the ...	22
Crowea saligna ...	26	Orchid houses, the ...	23
		Plants under glass ...	22
		Wood, ripened	28

ILLUSTRATIONS.

Allamanda Hendersonii (Coloured Supplement)
Echium Bourgeauanum in a Teneriffe garden 25
Echium candicans × E. simplex 19
Echium Pininana and E. simplex in a Teneriffe garden 20
Echium simplex 18
Lindenbergia grandiflora 27, 28

SOME EARLY-FLOWERING IRISES.

THE experience of the summer of 1912 has shown that we have still much to learn as to the conditions which favour or prevent the production of flowers by those species of Iris which bloom in winter. In August, when week after week brought little or no sunshine, but rather rain and low temperatures, it seemed as though such species as I. unguicularis and the smaller bulbous Irises would be unable to ripen their growth, and the prospect of them producing their usual crop of flowers became more and more gloomy. If the time could have been found, I should certainly have lifted all my bulbs of the Reticulata group, and, by storing them in dry sand, have attempted to give them artificially that ripening which they seemed unable to obtain naturally. However, the time for this slipped by, and the bulbs remained in the ground to take their chance.

The first surprise came early in December, when I found that two or three clumps of a very narrow-leaved form of I. unguicularis were full of buds. Unfortunately, I have been unable to ascertain from what locality this form comes. I obtained it some years ago from a nurseryman, who aroused my curiosity by advertising an Iris agrostifolia, of which no botanical description appears to have been published. The name is suitable, even though it is a Græco-Roman mongrel, and, presumably, means grassy-leaved. As a matter of fact, the tough, wiry leaves are not more than one-twelfth of an inch wide, and about 12 to 18 inches long. To judge from herbarium specimens, this is probably a Greek form, similar to that which was described by Janka as I. cretensis. As in many other cases, the author of this name was so intent on showing that the plant was not a certain Iris (in this case I. humilis, with which no one with any knowledge of Irises could easily confuse it) that he altogether omitted to say how he distinguished the plant he was describing from others that are obviously related to it. A close examination of this and other forms which I have received direct from Greece has failed to discover any difference except size between them and the Algerian I. unguicularis. Until this season these narrow-leaved forms have never bloomed until March or April, and this seemed a point of difference, which, however, now appears to have vanished. The flowers are smaller and have not the delightful scent of some Algerian plants, but the display lasted all through December and still continues at the commencement of January.

Moreover, some curious plants, which I received some years ago from Müller, of Nocera Inferiore, under the varietal name of pontica, after hitherto remaining flowerless, are now throwing up their buds. The foliage is scanty, short and broader than that of the ordinary Algerian form of I. unguicularis. The few flowers that have already opened have been enough to show that it will be extremely difficult, if not impossible, to distinguish this plant from another which has lately been introduced as I. lazica. The name pontica suggests the Black Sea, and Lazistan is on its south-eastern shore, so that the identity of the plants is not improbable. The flowers are scentless, smaller, of a darker purple, and more distinctly veined than those of typical I. unguicularis. What is remarkable is that, like the Greek forms, the plants from Pontus and Lazistan have always hitherto refused to flower until March or April.

But if it was a surprise to find buds on these various forms of I. unguicularis in December, it was no less astonishing to find that beds of I. histrio and I. histrioides were also showing their buds before the 20th of that month. Since then it has been possible to gather them daily, and they show off their beauty to the best advantage if stuck into wet earth or sand in small flat bowls. In water they are difficult to arrange, but, by filling the bowls in the manner suggested, they are easily induced to hold themselves erect.

A certain amount of confusion appears to exist between I. histrio and I. histrioides, and, indeed, at first sight there is considerable similarity between the two. Both vary to a large extent in the exact shade of colour and in the markings, and, moreover, each appears to possess more than one form. I am inclined to think that they must be separated from I. reticulata by their method of increase. Both produce at the base of the parent bulb a large number of minute bulblets not much bigger in many cases than grains of wheat. These never occur in the case of I. reticulata, so far as my experience goes. The chief points of difference between I. histrio and I. histrioides seem to be these: In I. histrio the leaves are at least as tall as—if they do not overtop—the buds. In I. histrioides the buds often pierce the soil before the leaves appear at all. The flower of the former is turbinate, that is to say that the hafts of the falls rise at a sharp angle and form with the standards the outline of a funnel or inverted cone. In I. histrioides the haft of the fall extends almost horizontally. In colour the latter is more uniform, and the deep blue of the edge of the blade of the falls extends for some distance towards the centre, where it gives place to a white ground blotched with blue. In typical I. histrio the colouring is produced by mottlings and veinings of deep blue distributed irregularly all over a paler blue ground. Moreover, the standards are very narrow, and curve gracefully outwards at the tip. In I. histrioides they are broader, and are held more erett. There is, however, a form of I. histrio in which the standards are erect and even actually incurved, almost meeting at their apex. To this I have ventured to give the varietal name of orthopetala. The spathes are rather longer than those of the typical form, and the leaves tend to develop more fully before the flowers appear. It would be a help to know where this form is to be found. Herbarium specimens of these species and of their forms are very unsatisfactory, but I am inclined to think that this variety orthopetala comes from Lebanon. In any case, typical I. histrio is found in the neighbourhood of Marash, while I. histrioides comes from further north in Asia Minor, and is obtained in the neighbourhood of Amasia. It is to this species rather than to I. reticulata, which is probably confined to the Caucasus and Northern Persia, that the plant described by Foster as I. sophenensis should probably be referred. It derived its name from the ancient name of the district in which Kharput is situated. It is found near this town, and agrees with I. histrioides in its method of increase, in the poise of the falls, in the short, stout foliage at flowering time, and in its coloration.

Another surprise of this curious season has been the flowering in the last week of December of a number of plants of I. Rosenbachiana, which does not usually flower until February or March. This species is, unfortunately, as rare as it is beautiful. It comes from the mountains of Turkestan, and is a true Alpine plant. That is to say, that it flowers as soon as the foliage pierces the soil, and the pace at which the flowers develop when once the broad, nipple-shaped sheath of the leaves has appeared above the surface is simply amazing. In a few days the gorgeous flowers are fully developed and stand 4 or 6 inches high on their long perianth tubes. In colour the plants are

very variable, one of the commonest forms having flowers of white and crimson, with a raised golden crest on the falls. The leaves only develop later in most forms, but it is then clear that the plant is a true Juno Iris, producing its flowers from the axils of the leaves. Unfortunately, my experience, and, I believe, that of others, has been that I. Rosenbachiana increases very slowly by offsets. My present plants have all been raised from seed. This is a slow process, taking about four years, but when at last the flowers appear, the trouble is well rewarded. Like many other plants in which increase by division is slow, seeds set with some freedom if the flowers are protected from wet, which, of course, destroys the pollen. The capsules, also, contain as many as 80 or 90 seeds, though these do not, unfortunately, germinate very easily. They often lie dormant for several years, and then suddenly germinate.

Many attempts to hybridise I. Rosenbachiana have been made and have failed, and I believe they are doomed to fail until some other members of the group to which this Iris belongs are introduced into cultivation. All the Juno Irises that we have at present, except I. Rosenbachiana, belong to one or other of two groups, which have never so far been crossed, and it is therefore not surprising that this exception, which is totally distinct from both groups in its seeds and in the shape of its falls, should refuse to hybridise with the members of either. Possibly, I. Rosenbachiana stands entirely alone, but I am inclined to think that I. drepanophylla, from the neighbourhood of Askabad and southward into Afghanistan, and possibly also I. linifolia, from Bokhara and Ferghana, may prove to be allied to it. *W. R. Dykes, Charterhouse, Godalming.*

NOVELTIES OF 1912.

ORCHIDS.

(Continued from p. 3.)

NURSERYMEN.

MESSRS. CHARLESWORTH & Co. secured First-class Certificates for Odontioda Queen Mary, a great beauty shown at the International; O. Cooksoniæ "Fowler's variety" (June 18); Lælio-Cattleya Orion var. Othello, one of the darkest forms; Cattleya Rhoda The Jewel, with clear yellow sepals and petals (November 5); and Odontoglossum "Her Majesty," one of the best Odontoglossums at the International Exhibition. The following plants obtained Awards of Merit: Zygopetalum Mackayi Charlesworthii, a rare albino; Z. Brewii, a pretty hybrid; Odontoglossum Chantecleer, brilliant scarlet; O. Epicaste; Cattleya Venus "Princess"; Lælio-Cattleya Fascinator-Mossiæ and its white variety; L.-C. amabilis (January 23); Sophro-Lælio-Cattleya Carna, of a glowing bronzy-scarlet; and Oncidioda cinnabarina, the curious bigeneric hybrid shown at the last meeting of the year.

Messrs. JAS. VEITCH & SONS exhibited a good number of fine Orchids during the past year, among them being the very handsome Odontoglossum Aurora, one of the finest of O. Rossii rubescens crosses, and for which a First-class Certificate was given. Awards of Merit were recommended for Brasso-Cattleya Ilene and B.-C. Marion, two very showy novelties; Lælio-Cattleya Invincible var. Orama, almost entirely rich claret-red; L.-C. Frederick Boyle "Veitch's variety," and the pretty Cypripedium Idina, shown on December 17.

Messrs. SANDER & SONS divide their interests between good and showy hybrids. In the former class they have the honour of introducing the superb white Dendrobium Schützei (a companion to their remarkable D. Sanderæ), which secured a First-class Certificate on September 10. In their fine group at the International Show, Odontoglossum amabile Duke of Portland, and O. eximium King George V. showed well and secured First-class Certificates, and at the same exhibition Awards of Merit went to O. majesticum Jas. Whitton, O. crispum Jas. McNab, and O. amabile Princess Mary, all of distinct character. Other awards obtained by Messrs. SANDER were for Cypripedium Roger Sander, a very fine and distinct flower; Dendrobium Goldiei, Lælio-Cattleya Walter Gott, and a Cultural Commendation (September 10) for a fine form of Vanda cœrulea with two spikes 4 feet in length, the plant bearing perfect leaves from the base upwards; a batch of their pretty Odontonia St. Alban was also shown, the new hybrid getting an Award of Merit.



FIG. 13.—ECHIUM SIMPLEX: FLOWERS WHITE.

Messrs. J. & A. MCBEAN had as their best novelty Lælio-Cattleya McBeaniana (C. Schröderæ × L. anceps Schröderiana), a charming flower, and Cymbidium Doris, both receiving First-class Certificates; and C. Schlegelii, Odontoglossum Fletcherianum nigricans, a nearly black flower; O. eximium "McBean's variety," equal to the best blotched O. crispum; Odontioda Charlesworthii "Orchid Dene variety," deep scarlet, and Cattleya Lord Rothschild albescens, all of which secured Awards of Merit.

Messrs. ARMSTRONG & BROWN grow their plants in rather lower temperature than in most collections, and the flowers always represent the varieties well. On several occasions they staged examples of their fine white strain of Cattleya Maggie Raphael alba, which secured an Award of Merit on January 9. Zygopetalum Armstrongiæ, the pretty hybrid of Z. rostratum, was certificated at the International Exhibition, and on June 4 they showed Cœlogyne pandurata with 16 flowers on a spike—one of the best examples of the species we have seen.

Messrs. STUART LOW & Co. received an Award of Merit for Cattelya Thurgoodiana Apollo.

CONTINENTAL NOVELTIES.

Monsieur FIRMIN LAMBEAU obtained a First-class Certificate for his unique, pure-white Cattleya Warscewiczii alba Firmin Lambeau, and the Gold Medal of the Royal Horticultural Society, his exhibit being well worthy of both awards. Monsieur LAMBEAU, who showed well at the International, secured a First-class Certificate for Miltonia Hyeana Vogelzang, and Awards of Merit for Cattleya Mossiæ Mme. Jules Hye and Odontioda Bradshawiæ Vogelzang.

Monsieur CHAS. VUYLSTEKE showed many fine Odontoglossums, but his own previous successes has raised the standard of excellence very high and difficult to excel. O. eximium excelsior, however, is the best of its class.

Monsieur JULES HYE sent several novelties to the International, and Count Joseph de Hemptinne obtained an Award of Merit for the pretty yellow Lælio-Cattleya Comte de Hemptinne.

Monsieur H. GRAIRE, the raiser of many pretty hybrids, and especially Odontiodas, obtained Awards of Merit for Odontioda Margarita (O. Madrense × C. Noezliana) and Odontoglossum Neptune (crispum × nebulosum), both pretty hybrids.

The following new and noteworthy Orchids were illustrated in the *Gardeners' Chronicle* during 1912:—

Brasso-Cattleya Digbyano-Mossiæ "Westonbirt variety" (Supp.), May 25, p. vii.
Brasso-Cattleya Wellesleyæ, March 2, p. 135.
Cattleya Brenda, March 9, p. 155.
Cattleya Artemis, July 27, p. 65.
Cattleya Dupreana "The Dell variety," December 14, p. 451.
Cattleya Dirce "Westonbirt variety," April 6, p. 226.
Cattleya Maggie Raphael alba "Orchidhurst variety," February 3, p. 75.
Cattleya Mossiæ A. Dimmock, August 3, p. 97.
Cattleya Warscewiczii "Low's variety," August 3, p. 86.
Cypripedium Latona, November 30, p. 402.

Cypripedium Viking, December 21, p. 463.
Dendrobium Apollo albens (Supp.), May 25, p. viii.
Dendrobium Schützei, September 21, p. 229.
Disa sagittalis, May 11, p. 312.
Epidendrum Stallforthianum, February 24, p. 114.
Habenaria conopsea alba, February 3, p. 68.
Lælia anceps G. D. Owen, February 3, p. 67.
Lælio-Cattleya Aphrodite Lord Faber, June 22, p. 405.
Lælio-Cattleya "Canhamiana variety" (Supp.), May 25, p. vi.
Lælio-Cattleya Gladiator (Supp.), May 25, p. ix.
Lælio-Cattleya Helius, May 18, p. 333.
Lælio-Cattleya Lustre var. Lavingo, June 8, p. 373.
Lælio-Cattleya Macbeaniana, April 13, p. 237.
Lælio-Cattleya Memoria H. A. Tracy, September 28, p. 242.
Lælio-Cattleya Rubens The Kaiser, July 20, p. 51.
Lælio-Cattleya Salome (Supp.), May 25, p. x.
Lælio-Cattleya Baroness Emma, July 13, p. 23.
Miltonia Memoria Baron Schröder (Coloured Supp.), November 9.
Miltonia Jules Hye de Crom (Supp.), June 1, p. xxv.
Miltonia vexillaria Snowflake, June 15, p. 400.
Odontioda Cooksoniæ "Fowler's variety," June 22, p. 418.
Odontioda Lambeauiana "Westonbirt variety" (Coloured Supp.), October 12.
Odontioda Queen Mary (Supp.), June 1, p. xxv.
Odontioda Madeline, August 3, p. 102.
Odontonia Edna, July 13, p. 36.
Odontoglossum amabile "Westonbirt variety," July 20, p. 42.
Odontoglossum crispum Bumble-Bee, August 17, p. 128.
Odontoglossum crispum Saga, April 20, p. 267.
Odontoglossum crispum Samuel Gratrix, March 30, p. 197.
Odontoglossum Jasper, March 30, p. 196.
Odontoglossum Memoria Lily Neumann, February 17, p. 99.
Odontoglossum Merlin, February 10, p. 92.
Odontoglossum Uro-Skinneri "Burford variety," May 4, p. 307.
Phalænopsis amabilis (fertilised), December 14, p. 457.
Phalænopsis intermedia Portei, December 14, p. 453.
Stanhopea oculata, August 16, p. 121.
Vanda cœrulea Lady Holford, November 9, p. 356.
Zygopetalum Mackayi Charlesworthii, February 10, p. 83.

(To be continued.)

NEW OR NOTEWORTHY PLANTS.

ECHIUM WILDPRETII AND OTHER SPECIES.

IN the *Gardeners' Chronicle* for December 7, under the heading of "Echium Wildpretii," are some notes, signed *W. W.*, which I have read with great interest, and to which I beg to add a few further remarks.

After I had sent the article referred to by *W. W.* for publication to the *Revue Horticole*, Sir David Prain most kindly sent me a tracing of Echium Auberianum Webb (from the plate in Barker Webb and Berthelot's work), calling my attention to the fact that the latter plant was not synonymous, as generally admitted, with E. Bourgeauanum Webb (see fig. 16, p. 25), and describing to me the specific differences between the two, based mainly on the corolla, the stamens, and the style. He added that E. Auberianum was a very rare plant, of which only one dried specimen existed; it was found on Montaña Blanca on the way up to the Peak of Teneriffe, whilst E. Bourgeauanum was comparatively common, having been freely distributed by Webb's collector, Bourgeau; also that it was this plant which closely resembled E. Wildpretii.

On seeing the above-named tracing, I was at once struck by the great likeness of E. Auberianum to E. plantagineum or violaceum so common in this island, and I ventured to suggest that the very rare E. Auberianum Webb, depicted in Webb's work, may well have been a hybrid, as follows: E. Bourgeauanum × E. plantagineum. I was encouraged in this belief by the fact that the last-named Echium, as well as growing in the coast region of this island, abounds also in our Alpine region, where hybridisation can easily take place through the agency of the numerous bees that are taken up to feed on the flowers of Cytisus fragrans precisely at the time of year when Echium Bourgeauanum bloom is in. This plant, like all the Canary Islands species of Echium, provides very good fodder, and the numerous goats that roam about the Cañadas would long ago have caused it to disappear were it not that it has found a shelter in the inaccessible and perpendicular walls north of Guajara at an altitude of about 8,000 feet. It likewise occurs on the north of the plain of the Cañadas in the precipices of the Fortaleza.

I believe that its possibilities for English gardens are great, as in its habitat snow falls freely in winter, and there are frosts. Pretty garden hybrids ought to be obtained between it and E. vulgare, which grows in England. I have myself raised a very pretty hybrid (see fig. 14) (from a cross between E. candicans and E. simplex), which has pale blue flowers the shade of Plumbago capensis. Of the other species indigenous here E. candicans is the hardiest after E. Bourgeauanum, and might also be employed for crossing purposes with E. vulgare.

Once well known, all these plants will become very popular in English gardens for showy borders.

Both E. simplex (see fig. 13) and E. Bourgeauanum have reached, in my garden, when in flower, 11 feet 8 inches in height, and E. Pininana (see fig. 15) is recorded as having attained in the island of Palma over 16 feet. At present I have a two-year-old plant of E. Pininana which shows no signs of flowering yet, and is over 10 feet, looking more like a small Palm than anything else (see the *Revue Horticole* for August 1, 1912). *George V. Perez, Puerto Orotava, Teneriffe.*



FIG. 14.—HYBRID ECHIUM (E. CANDICANS × E. SIMPLEX): FLOWERS PALE BLUE.

PTEROSTYRAX HENRYI,* DÜMMER.

THIS new species is a spreading bush or very small tree; second and third year's twigs terete, chestnut-brown and glabrous; current year's shoots very slender but short, slightly appressedly puberulous at their tips, otherwise glabrous, angulate-terete, rich brown; internodes $\frac{1}{6}$ to $\frac{1}{2}$ inch long. Leaves alternately disposed, shortly but distinctly stalked, everywhere glabrous; petiole greenish, $\frac{1}{8}$ to $\frac{1}{4}$ inch long; blade elliptic or elliptic-oblong, shortly and acutely cuspidate, or obtuse, narrowing slightly from below the middle to the base, 2 to 5 inches long, $\frac{3}{4}$ to $2\frac{1}{4}$ inches broad, firmly membranous, dark green above, paler below, the brown midrib and its 5 to 7 pairs of principal lateral veins most prominent on the latter side; margin plane or slightly wavy, entire or slightly dentate, the teeth obsolete, obtuse, and $\frac{1}{12}$ to $\frac{1}{6}$ inch distant. Raceme two to six-flowered, the pedicels $\frac{3}{4}$ to 1 inch long, slightly stellately pubescent or glabrous, brownish, the lower subtended by persistent leaf-like, the upper by small subulate deciduous bracts. Fruit narrowly obconic, about $\frac{1}{2}$ inch long, $\frac{1}{8}$ to $\frac{1}{4}$ inch broad, at first eight-ridged, then smooth, greyish, thickly stellately pubescent, terminated by the slightly shorter conic glabrous brownish style. Calyx-teeth small, triangular, persisting on the fruit.

The genus Pterostyrax (Halesia of certain authors) is represented in China and Japan by about four species, of which P. hispida and P. corymbosa have been introduced to cultivation, constituting a valuable addition to the list of hardy and, moreover, ornamental shrubs emanating from these regions. P. Henryi has hitherto not appeared in culture, but should undoubtedly form a valuable adjunct to the species now obtaining in English gardens. It is at once distinguished from these by the wholly glabrous character of the twigs and leaves, the membranous texture and the finely reticulated surfaces of the latter, the few-flowered racemes and the finely stellately pubescent fruit. Flowers are as yet unknown, but judging from comparative examination of various characters, are premised to be of fairly-large size. P. Henryi was collected by Dr. A. Henry in Szechuen, China, and specimens were communicated to Kew by him in February, 1890; subsequently Mr. A. E. Pratt discovered it in Western Szechuen and the Tibetan Frontier, chiefly near Tachienlu, at elevations between 9,000 to 13,500 feet above sea level.

* Species nova, valde distincta, mox omnino glaberrima fructibus exceptis, foliis tenuiter chartaceis utrinque prominenti reticulatis, fructibus stellato-pubescentibus facile distinguenda. (Henry, 8856; Pratt, 371: Herb. Kew.)

CULTURAL NOTES.

THE PROPAGATION OF STATICES.

CERTAIN Statices, notably S. profusa and S. Gilbertii, are very difficult to propagate from cuttings. The shoots selected for cuttings should be of moderate strength and not too hard; if possible, they should be taken with a heel of the old wood. They should be inserted in small pots, in a compost consisting of equal parts loam and good, fibrous peat mixed with plenty of silver sand. Place the cuttings in a case in an intermediate temperature, but do not keep the atmosphere too close; air should be admitted freely during the morning, and after the first few days the case may be ventilated a little during the whole of the time the cuttings are contained therein. When the cuttings are inserted, they should receive one copious watering, but they should not be watered again until the soil is quite dry, for an excess of moisture either at the roots or in the atmosphere will prove fatal. When the cuttings have rooted, they may be removed to a cooler house, such as a greenhouse or the Heath house, but it will be necessary to place them in a frame without bottom-heat for a few days, so that they may be kept close at night. Statice profusa may be propagated by layering the same as Carnations. When the shoots are pegged into the soil, the latter should be covered with damp moss. This method, however, is not always practicable.

Statice intermedia may be propagated from cuttings very easily; well-matured cuttings inserted in small pots and placed in a case in an intermediate temperature provided with slight bottom-heat will form roots within a fortnight or three weeks after they are inserted, there being, as a rule, only a very small percentage of failures. S. profusa and S. Gilbertii are more difficult to propagate, probably because they will not succeed in a moist atmosphere. Plants that are layered should be moved from the greenhouse into a house with a minimum temperature of 60°, but they do not require any bottom-heat or the assistance of a frame. *Ralph E. Arnold*

THE MARKET FRUIT GARDEN.

THE great rainfall of December helped materially to bring the total for last year much above the average. At my station rain was measurable (at least one-hundredth of an inch) on 18 days, amounting to 3.80 inches. The rainfall for the year is as follows:—

Months.	Rain days.	Inches.
January	15 ...	... 2.35
February	17 ...	... 2.21
March	18 ...	... 3.87
April	2 ...	... 0.05
May	9 ...	... 1.54
June	13 ...	... 3.16
July	13 ...	... 1.00
August	23 ...	... 5.48
September	6 ...	... 3.48
October	15 ...	... 4.43
November	16 ...	... 1.86
December	18 ...	... 3.80
Total	165 ...	... 33.23
Average for the 11 years 1901-1911 ...	149 ...	... 28.32
Excess in 1912 ...	16 ...	... 4.91

In the report for the 11 districts into which the United Kingdom is divided, issued from the Meteorological Office, an excess of rainfall in 1912 is recorded for all but one—the west of Scotland. The range of excesses over the average for 25 years is from 0.81 inch for northern Ireland to 9.57 inches for the south-west of England, and other excesses are 8.76 inches for the extreme south, 8.38 inches for the Midlands, 6.31 inches for the north-east of England, 6.22 inches for the eastern counties, and 5.58 inches for the south-east of England.

The past year was the fourth wet one in succession, at least at my station, as the following details will show:—

Years.	Rain days.	Inches.	Years.	Rain days.	Inches.
1901	93	19.32	1907	158	26.83
1902	148	22.70	1908	142	26.55
1903	181	37.16	1909	157	34.54
1904	146	24.10	1910	162	33.30
1905	153	27.28	1911	133	30.40
1906	161	29.35	1912	165	33.23

It will be noticed that 1901 was very much the driest, and 1903 the wettest of the 12 years. Up to and including 1902 there had been a series of dry seasons, beginning with 1895. My own records do not go back so far; but at London (Brixton), where the average for 30 years up to 1895 was 24.84 inches, the rainfall of every year from 1895 to 1902 inclusive was below the average, the range being from 17.82 inches in 1898 to 23.33 inches in 1897. At Brixton 1902 was a drier year than 1901, though not at my station.

DROUGHT OR FLOOD.

If offered the choice of two evils—drought or flood—I should choose the former for many reasons, at least for fruit trees, though not for Black Currants or Raspberries. For Strawberries, if they get a good soaking when coming into blossom, drought, it seems to me, is preferable to flood. Of course such drought as that of 1901 is injurious to everything, especially when the scanty rainfall is distributed over such a very small number of days. But the conditions of 1902, with 148 rain days and a rainfall of 22.70 inches, are preferable, in my opinion, to those of 1903, with 181 rain days and 37.16 inches. Now, let me give the reasons for my choice between two evils. On the one hand, it is to be borne in mind that a wet season means a cold season, and an abundance of summer heat and sunshine are necessary to the perfect maturing of fruit crops. Again, a wet season encourages the development of scab and canker in Apples and Pears, and brown rot in Plums, Cherries, and to a less extent in Apples. In the third place, wet weather causes the soil to run into a compact mass, in which bacteria cannot multiply freely. If wet weather prevails at the fruit-gathering season, its disadvantages are obvious. Tons of Strawberries and Raspberries are often ruined by wet weather, while large quantities of Plums and Cherries are split and spoilt. Then it is impossible to keep fruit plantations clean in a wet season, or to find profitable work for all the hands for a good part of the year. Lastly, a wet and cold summer and autumn greatly reduce the demand for fruit, and thus affect prices.



FIG. 15.—ECHIUM PININANA AND E. SIMPLEX (IN THE FOREGROUND) IN A TENERIFFE GARDEN.

(See p. 19.)

On the other hand, where orchards are kept well cultivated by horse and hand hoeing, so that there is a mulch of fine soil on the surface, they will withstand a great deal of dry weather. When severe drought sets in, as it did last April after a flood of rain, the land soon dries to a condition of such hardness that it can hardly be moved by hoes. But this is the fault of the flood rather than of the drought, as land will always hoe well in April when there has not been an excess of rain. A dry March is one of the greatest of blessings to all classes of farmers or fruit growers, as it allows of cultivation of the soil while this latter is in a friable condition induced by the frosts of winter. Then Apples and Plums have both been finer in certain dry seasons than in some wet ones, and have dropped less off the trees, while the fruit has kept much better after being gathered.

Of course the periods in which the excessive rain occurs make a great difference to results. Wet and cold weather when the blossom is setting must have bad effects in preventing bees and other insects from fertilising the blossoms to the full extent, if in no other way. Drought, too, is very injurious if it occurs when the fruit should be swelling. The frequency of rain also counts for a great deal. A great quantity could be endured in the summer, if it fell on comparatively few occasions, so that there would be intervals of dry weather and sunshine between the rains, and not the prolonged spells of low temperature which accompany rain when it falls day after day for a long time. *A Southern Grower.*

TREES AND SHRUBS.

DWARF CONIFERS.*

IN many genera of Conifers dwarf individuals, which are seminal or rarely bud-variation forms, have appeared and have been multiplied by nurserymen and others interested in the cultivation of such plants, the largest number of such abnormal forms being found naturally among the seedlings of species which have been the most largely cultivated. The seedlings of no other Conifer, perhaps, show so great variation as those of the Arbor Vitæ of the eastern United States, Thuya occidentalis. Some of these forms are very dwarf, forming round compact heads only a foot or two high; others grow into large globular masses; others again form narrow pyramids, and some have pendulous branches. They vary, too, in the colour of the foliage, that of some forms being of different shades of green, and that of others yellow. Like many other dwarf Conifers, several of these forms are well suited for the decoration of the rock garden and for dwarf hedges or small beds. The collection of the forms of Thuya occidentalis in the Arnold Arboretum is probably one of the largest in existence and contains many interesting specimens. It is established on Yew Path leading from the Valley Road to the Hemlock Hill Road, and adjoining the Arbor Vitæs is the collection of Chamæcyparis (Cupressus) or White Cedars. The species of this genus from the Pacific Coast are not hardy in New England, so it is not possible to grow here various dwarf forms of C. Lawsoniana which are common in European collections. Of the Japanese species, often called Retinosporas, there are several dwarf forms, the most beautiful of these perhaps being the variety nana of C. obtusa. For those who admire plants with coloured foliage C. pisifera argentea is an attractive small plant. Of the White Cedar of the eastern United States (C. thyoides) there are a few interesting dwarf forms. The most conspicuous of these is probably the variety ericoides, of dwarf, compact, pyramidal habit, with leaves which, as well as the branches, turn reddish-brown with the first cold weather and retain this colour until spring. Another interesting form is the variety leptoclada, also of dwarf habit and bluish-green colour.

One of the most valuable of all the dwarf evergreens is that variety of the Japanese Yew (Taxus cuspidata), which is now cultivated in American gardens as variety brevifolia, but is not to be confounded with Taxus brevifolia, which is a Californian tree. This variety of the Japanese Yew has very dark-green leaves and wide-spreading, rather irregularly-growing branches; it attains a height of only 4 or 5 feet, but sometimes covers a space 10 or 15 feet in diameter. Seedlings raised from this plant often assume the upright growth of the typical species. In the collection of Yews on Yew Path there is also a small, very compact plant of a form of Taxus cuspidata, which is one of the most distinct and beautiful of all the dwarf evergreens in the Arboretum; this appears to be a unique plant, and has not received a name. Nearly all the forms of the European Yew (Taxus baccata) suffer more or less severely here from cold, and several of them are unable to survive a New England winter. There is, however, one form which is perfectly hardy; this is a broad, flat-topped, rather compact shrub not more than 2 feet high, with exceedingly dark-green foliage. This variety is sometimes sold in American nurseries as Taxus repandens; this name has not been published, however, in any of the technical books on Conifers, and we know nothing here of its origin. It has lived entirely uninjured for several years on the edge of the group of Yews on Hemlock Hill Road at the entrance of Yew Path, one of the most exposed positions in the Arboretum. This is certainly a plant of great value for this part of the country.

Among the Junipers there are several dwarf forms of the arborescent species. Of our common Red Cedar, Juniperus virginiana, a form with branches spreading close to the ground, grows at several places on the coast of Maine. The plants of this form in the collection are too young to show their habit; it has not yet received a name. The form globosa of the Red Cedar is a small, round, handsome shrub well worth a place in collections of these dwarfs. The var. tripartita, which is not rare in European nurseries, is a low, broad shrub, with spreading and erect branches forming a wide, open head. There are a number of large plants of this form on the left of the entrance to the path which leads from Yew Path to the knoll on which the Juniper collection is established.

Of Juniperus chinensis the best-known dwarf form is the variety procumbens, with elongated branches spreading into wide mats. Of this species there are also in the collection plants of a dwarf form with erect stems forming small, round-topped shrubs. Of the European Savin (J. Sabina), the var. tamariscifolia is a vigorous prostrate shrub, and the variety humilis, which is the smallest of all the Junipers in the collection, is only a few inches high with small, spreading prostrate stems.

Of the Conifers of the Pacific coast, with the exception of Lawson's Cypress and the Douglas Spruce (Pseudotsuga mucronata), no dwarfs have yet appeared, or, if they have appeared, they have not been multiplied in nurseries; and this seems to be true of the Firs, Spruces, Pines and Hemlocks of Asia with one exception; this is the dwarf form of the Japanese Pinus densiflora (var. pumila) which is much cultivated in Japanese gardens, and is one of the handsomest of all dwarf Conifers. This little Pine, which sometimes grows to the height of 6 or 8 feet and forms a head of spreading branches 10 or 12 feet through, is perfectly hardy here, and is now well established with a number of other dwarf Conifers on Conifer Path. Unlike other dwarf Conifers, this plant flowers freely, and occasionally bears cones. There are dwarf forms of the common White Pine of the eastern states, Pinus Strobus, which are decorative plants, and several dwarf forms of the so-called Scotch Pine (P. silvestris), which are more pyramidal in habit than forms of the White Pine. The most commonly cultivated dwarf Pine, however, is the Mugho Pine (P. mughus or pumilio). This is a shrub of the mountains of Central and Southern Europe, and a form of P. montana, growing sometimes with that tree as on the Pyrenees, and sometimes, as on the Dolomites, by itself without other forms of the species. In cultivation it is a broad shrub, with numerous erect stems, occasionally reaching the height of 15 feet, and covered with dark-green foliage. Plants in cultivation produce cones freely, and the seedlings probably retain the habit of the parent. There are two quite distinct forms in the Arboretum collection, one with much coarser leaves than the other. This Pine is perfectly hardy, and grows rapidly, but long before it reaches its full size it loses the lower branches and compact form which is the chief beauty of the young plants.

No other Conifer, with the exception, perhaps of the eastern American Arbor Vitæ, has shown so great seminal variation as the European or Norway Spruce (Picea Abies), and some of these forms are among the most attractive of all the dwarf Conifers. Some of the best of these are variety Clanbrasiliana, a low bush seldom more than 6 feet high (var. Gregoriana), usually not more than 1 to 2 feet high, and the varieties pumila and pygmæa, both of exceedingly dwarf habit. Of our native Black Spruce (Picea Mariana) the var. Doumettii is a compact, pyramidal plant, which does not often grow more than 10 or 12 feet tall, and is of bluish colour. An interesting dwarf form of the Rocky Mountain Blue Spruce (P. pungens or Parryana, or as it should be called, P. Menziesii) appeared several years ago in the Arboretum nurseries, and promises to be valuable as a decorative plant. It has not yet received a name. There is in cultivation, too, a dwarf of the Spruce tree of the Caucasus (P. orientalis), which, however, is little known in collections, and in the Arboretum collection are two plants of a dwarf Douglas Spruce.

The genus Abies, the Firs, have as yet produced few dwarf forms. The best known is probably the dwarf of the Balsam Fir of north-eastern North America (A. balsamifera), known in gardens as A. Hudsonica, a very dwarf and not particularly attractive plant. There is a dwarf pyramidal form of the Fir of Central Europe (A. Picea), but this, after a few years, is apt to lose its dwarf habit and grow into a tall tree. A dwarf form of the Rocky Mountains (A. lasiocarpa) was raised several years ago in the Arboretum, and is still a true dwarf in habit, although grafts taken from this plant are beginning to assume the narrow pyramidal habit of the species. The original plant can be seen in the bed of dwarfs on Conifer Path, where there are three grafted plants of the dwarf Rocky Mountain Blue Spruce.

The common Hemlock of the eastern states (Tsuga canadensis) has a strong tendency to seminal variation, and dwarf and other abnormal forms of this tree often occur in the woods. The most distinct and interesting of these is a compact form with closely-appressed pendulous branches forming a broad, low, round-topped mass. Many years ago, four or five plants of this form were found by the late Joseph Howland, of Mattapan, New York, on one of the mountains back of Fishkill Landing, on the Hudson River, and were named by him Sargent's Hemlock, for his friend and neighbour Henry Winthrop Sargent. Only one or, perhaps, two of these wild plants are now living, although the variety has been much propagated by nurserymen by grafting its branches on the common Hemlock. These grafted plants, as they grow more rapidly and are of more open habit, are less compact and less beautiful than the original seedlings. The plant in the Arboretum among the large collection of dwarf Hemlocks on Hemlock Hill Road is a grafted plant, but at Holm Lea, in Brookline, there is one of General Howland's original plants. The beautiful Carolina Hemlock (T. caroliniana) has not been very largely cultivated, but among the plants in the Arboretum Pinetum, near the corner of Centre and Walter Streets, are two plants which look as if they were true dwarfs, as they are less than one-quarter of the size of the other trees of the same age growing with them, and show no tendency to form an upright stem.

SOPHORA (EDWARDSIA) GRANDIFLORA.

THIS handsome shrub grows and flowers well in certain gardens of the south-west of Scotland, but probably the finest plant in that country is in the garden of Sir Herbert Maxwell at Monreith, Wigtownshire. It is planted against a wall of the gardener's house, and flowers freely every season, making a charming picture with its bright yellow blossoms. In inland gardens the shoots are cut back by frosts, and the plants never assume the vigour and beauty presented by the specimen at Monreith. *S. Arnott.*

* *Bulletin* No. 26. Arnold Arboretum, Jamaica Plain, Mass.

CHESTER'S NEW MAGISTRATES. — Amongst the names of those recently appointed to the magisterial bench of the City of Chester are Prof. ROBERT NEWSTEAD, F.R.S., Mr. J. D. SIDDALL, and Mr. GEORGE P. MILN. All three gentlemen have been closely connected with the work of the Chester Paxton Society. Professor NEWSTEAD, who is President of the Chester Natural Science Society, succeeded Mr. MILN, who held office for three years, and Mr. SIDDALL has likewise previously held the office for a similar term. Each gentleman holds the Kingsley Memorial Gold Medal

The Week's Work.

PLANTS UNDER GLASS.

By F. JENNINGS, Gardener to the Duke of DEVONSHIRE, Chatsworth, Derbyshire.

WINTER-FLOWERING BEGONIAS.—Begonias of the Gloire de Lorraine type should now be cut over, taking great care that only the flower-spikes are removed and that the plants are not cut right down. By this method the cuttings will come sooner and stronger from the base. Keep the plants growing in a temperature of 60° to 65° in order that they may produce suitable growths for cuttings.

POINSETTIA.—Plants of Poinsettia that have ceased to be decorative should have their flower-heads removed, but do not cut these down too low. Place the plants under the staging of the house to dry off gradually.

SOUVENIR DE LA MALMAISON CARNATIONS.—Watch carefully at this time of the year for green fly. Young plants in 7-inch pots should have all the ventilation possible, even if the temperature of the house falls as low as 40°. Great care should be taken with the watering; do not let the plants get too dry. Avoid the use of fire-heat as much as possible. Two-year-old plants should be treated in much the same way, but it will depend on the period of the year the flowers are required what temperature should be maintained. For the two-year-old plants applications of Clay's manure once a week or every ten days will be beneficial. Apply a dessert-spoonful of manure and a little soot mixed, but prevent the manure touching the stems of the plants.

THE CONSERVATORY.—Various bulbs, forced shrubs and other plants will furnish a bright display of flowers at this season. In conservatories where Palms and flowering shrubs are planted in borders, Ruellia macrantha makes a fine display in winter, also Begonia fuchsioides, Linum trigynum, Pleroma macrantha, Justicia carnea, Hibiscus and Abutilons.

CAMELLIA HOUSES.—Luculia gratissima, which is now in full flower, is a suitable plant for associating with the Camellias which are on the point of flowering. Specimens five years old are from 12 to 14 feet high. Great care should be taken to keep the Camellias clean. A good plan is to syringe them overnight occasionally with soluble paraffin and wash them next morning with clear water, applied by means of the hose-pipe.

CHRYSANTHEMUMS.—The cuttings should be examined carefully, and any that are rooted removed near to the roof-glass, where air can be given. If cuttings of certain varieties were not obtainable earlier suitable shoots should be inserted without delay. Where considerable numbers of summer-flowering Chrysanthemums are cultivated, it is a good plan to place the old stools in boxes, and cover them with old potting-soil or manure from a spent Mushroom bed. If the roots are placed in early vineries or Peach houses they will soon produce numbers of shoots suitable for cuttings.

CINERARIA AND SCHIZANTHUS.—Plants of Cineraria and Schizanthus that have been wintered in frames should be brought into the glasshouses at once. Feed the roots with manure-water made from cow, sheep or deer dung. Place the manure in a bag in a tank of water, and dilute the strength according to requirements. Fumigate the plants directly they are housed.

ROSES IN POTS.—Plants that have not been attended to should be put in order without delay. See that the drainage is efficient, and top-dress the plants with a mixture of loam, mortar rubble, dry cow-dung and fine bones. Any necessary pruning should be completed, and the pots washed, preparatory to introducing the plants into a house where growth may be started very gradually in a temperature of 45°. When a succession of blooms is required a batch of plants should be brought indoors each week. Do not open the side ventilators. Climbing Roses should have all weak wood removed, and be otherwise pruned according to the requirements of the individual varieties. If practicable, fork the surface of the border and apply a top-dressing of good cow manure, followed immediately by a copious watering.

CANNA.—Cannas raised from seeds sown at this period of the year and grown in a stove temperature during the summer, should flower well next autumn. If the seed-coats are notched with a knife and the seeds afterwards placed in a pot of warm water for 24 hours, germination will take place almost immediately afterwards. Sow a single seed in each thumb pot; by this means little damage will be done to the roots when the seedlings are repotted. Old roots of Cannas that are dormant should have the soil shaken from them carefully, the dead portions removed, and the plants repotted in rich soil mixed with plenty of rotted cow manure. Start them into growth in a warm house. An early vinery or a Peach house is suitable if a plant house is not available for them.

THE FLOWER GARDEN.

By EDWARD HARRISS, Gardener to Lady WANTAGE, Lockinge, Berkshire.

SWEET PEAS.—A sowing of Sweet Peas should be made if the work has not been done already. The safest method is to sow two or three seeds in each 3½-inch or 4-inch pot, placing the pots in a moderately warm pit. Cover them with boards till the seedlings are through the soil, to protect the seeds from mice. Grow the seedlings in very cool conditions from the first, admitting plenty of fresh air whenever the weather permits, and keeping them near to the roof-glass. Support the shoots with small twigs, which should be placed in position when the plants are very young. The seedlings may eventually be hardened off and placed in a cold frame till planting time arrives. Let the ground be prepared as soon as possible, both for the early and later batches. Deep cultivation and plenty of well decomposed cow manure are necessary to obtain the best results. At the final preparation of the ground a liberal quantity of soot should be scattered over the surface. A sowing of Sweet Peas may be made out-of-doors towards the end of January, selecting a warm border. If the ground is heavy the seeds should be covered with old potting-soil sifted finely. It will be advisable to sow the seeds rather thickly. Birds and mice will do much damage unless they are guarded against.

PELARGONIUM.—Cuttings of Pelargoniums which were rooted in the autumn should be placed in a warm house, such as a fruit house which has just been started. Those which are growing in boxes should be potted into 4-inch or 5-inch pots in a compost of loam, leaf-mould and sand. If the stock of any variety is insufficient, cuttings may be inserted when suitable shoots are available for the purpose. The cuttings will root best if inserted around the sides of 4½-inch pots, placing four or five cuttings in each pot. The compost should be of an open texture and contain plenty of coarse sand. There may not be room in the ordinary pit to propagate bedding plants at this time of year, but the difficulty may be overcome by forming a moderately warm hot-bed in a heated pit of some other kind. All bedding plants may be propagated easily in this manner. Fuchsias, Salvia Glory of Zurich, Tropæolums, Ageratums, Lantanas, and Lobelias may all be potted and placed near to the roof-glass in a warm, moist atmosphere. Any of these subjects may be increased by cuttings inserted in fine, sandy soil, which must be made firm. Cover the surface of the soil with a sprinkling of coarse sand before inserting the cuttings. Salvia Glory of Zurich is a very effective plant for the flower garden when massed with other suitable subjects. Large, well-established plants will flower out-of-doors during the greater part of the season. The plant is very subject to attacks of red spider when grown under glass, and measures must be taken to destroy this pest, dipping the leaves in an insecticide. Towards the end of the present month sow seeds of Wigandia, Delphinium, Canna tuberous and fibrous-rooted Begonias, Hollyhock and Verbena.

EARLY-FLOWERING CHRYSANTHEMUMS.—These plants are valuable for the mixed border or supplying cut blooms in the reserve garden. The clumps which were dug up in the autumn and placed in cold frames have developed plenty of shoots suitable for cuttings. The roots may be divided and potted up, or cuttings may be taken and inserted in pans or boxes in sandy soil, placed in a frost-proof pit. Harvest Home, Horace Martin, Improved Masse, Crimson Marie Masse, Ambrose Thomas, and Source d'Or are a few of the many decorative varieties suitable for the purpose.

PROTECTING PLANTS.—The winter has been unusually mild and many bulbous plants are growing rapidly. Certain of the more tender subjects will need slight protection should severe weather set in. It is a good plan to have ready a quantity of dry bracken for the purpose. Plenty of material should be available for covering frames which are sheltering bedding plants.

THE KITCHEN GARDEN.

By JOHN DUNN, Foreman, Royal Gardens, Windsor.

PEAS.—A sowing of a good, hardy Pea may be made as soon as the soil is in a suitable condition, choosing a sheltered situation. Trenches may be dug 6 inches deep and the excavated soil laid on the side of the trench which is most exposed; the ridge of soil will afford a certain amount of protection to the young plants until they are several inches high, when branches of Spruce, Fir or other evergreens may be placed amongst the Pea sticks. Sow the seeds a little thicker now than will be necessary later in the season, and cover them with 2 inches of fine top-soil. The Pilot is a good variety for this sowing: the plants are hardy and furnish pods containing from eight to ten dark-green Peas of splendid quality. If only moderate supplies are required, the seeds may be sown in pots and placed in a cold pit. Admit plenty of air, and expose the plants fully to the light so that the growths will not become drawn.

BROAD BEANS.—A sowing of Broad Beans may be made in ground which has been dug deeply and manured heavily in the autumn. Sow the seeds in double rows at 8 inches apart, allowing 4 feet between the rows. Spinach may be grown in the space between the plants, but it should be cut before the Beans are ready to gather. When the plants have made good progress and set a sufficient quantity of pods, the tops may be pinched from some of them to hasten their development. Early Longpod is a good variety for sowing now, and Improved Longpod may be planted for succession. Young Bean plants are attacked by slugs, and should be dusted frequently with soot and woodashes.

ASPARAGUS.—If roots are available, the forcing of the plants may be commenced at once. Few vegetables may be forced more easily than Asparagus, provided a pit is available for the purpose. A hot-bed of leaves should be formed to the depth of 4 feet, and when the temperature of the bed has fallen to 70° a layer of well-decomposed farmyard manure, 2 inches thick, should be spread over the surface. Cover the manure with finely-sifted leaf-mould to the depth of 1 inch, and arrange the Asparagus roots in this material as closely together as possible without damaging them. Cover the stools lightly with sifted soil, and water the roots with water warmed to 75°. After a few days the young shoots will appear, and may be covered with several inches of finely-sifted leaf-mould. Further waterings should not be necessary, but care must be taken that the temperature of the bed does not rise above 75°, or the roots will be injured. The best plants for forcing are those which have been grown specially for the purpose, without cutting the shoots, although good results may be obtained by lifting some of the older plants from the beds.

LETTUCE.—Small sowings of Lettuce may be made, either in boxes placed in a heated pit or in a bed in a pit. Pioneer and Golden Queen are reliable varieties for frame culture.

CAULIFLOWERS IN COLD PITS.—The plants should be ventilated freely. If seedlings are still growing in the seed-bed they should be potted without delay, as there will be less danger of them becoming pot-bound than those shifted some time ago.

RADISHES.—Make frequent sowings of Radishes to maintain a supply throughout the season. Radishes require a rich soil and liberal supplies of water.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir TREVOR LAWRENCE, Bart., Burford, Dorking.

ZYGOPETALUM.—Plants of Zygopetalum maxillare and its white-lipped variety Sanderianum are starting into growth, and should be attended to at the roots. As this species extends its climbing rhizomes several inches annually, it is not suited to pot culture; it grows naturally upon the stems of Tree Ferns, and is usually imported with its roots firmly established in the stem. So far as my experience goes, the plant will not grow well for long together in the composts ordinarily employed for Orchids; the roots, as a rule, damp off in a short time, and the specimen deteriorates. When a plant has overgrown its natural block of Tree Fern, it is advisable to affix on the top of the original portion, by means of wire, a fresh piece of Fern stem. The roots should never be in the least dry. Suspend the block perpendicularly from the roof at the cooler end of the intermediate house, and where the sun will not shine directly upon the foliage. Immediately growth commences, moisten the block each morning, and, when the new roots grow freely on the Fern block, spray the whole of the plant overhead each afternoon when the house is damped. Thrips, if present, invariably attack the young shoots, and once they get down in the centre of the growth or in the axils of the leaves it is exceedingly difficult to eradicate them before much damage is done. Each plant should be examined for the pest every day, and even twice a day when the weather is warm and bright. Plants of Z. Mackayi and its variety crinitum that have recently passed out of bloom may be repotted should they require it. A mixture of fibrous loam, Osmunda fibre (cut up small) and Sphagnum-moss in equal parts, with plenty of small crocks added, will provide a suitable compost. Such hybrids as Z. Sedenii, Z. Perrenoudii, Z. Murryanum, Z. Clayi, Z. Gottianum, Z. leucochilum, and Z. Sanderi, also the species Z. brachypetalum, Z. Burkei, Z. grandiflorum, Z. Jorisianum, and the rare Z. Ballii require similar treatment. These hybrids and species should also be grown at the cooler end of the intermediate house, and they should be protected from the direct rays of the sun at all times. It is important to grow the plants in clean, well-drained pots. In repotting, press the soil only moderately tight about the roots, and leave sufficient space at the surface for watering. Old and well-established plants should be watered thoroughly each time the soil becomes dry. Damp the spaces between the pots two or three times daily when the weather is fine, but do not promote too much atmospheric moisture during cold and frosty weather. Insect pests should be well sought after at all times.

ZYGOCOLAX.—These beautiful Orchids have been raised from Zygopetalums crossed with Colax jugosus. Zygocolax Veitchii, Z. Amesianus, Z. Charlesworthii, and Z. leopardinus require a similar treatment to that advised for Zygopetalums.

THE HARDY FRUIT GARDEN.

By B. GOODACRE, Gardener to Sir ERNEST CASSEL, Moulton Paddocks, Newmarket.

PRUNING ORCHARD TREES.—Growers differ in the methods they employ for pruning orchard trees. Whilst some thin the shoots to excess, others neglect to prune the trees at all. Young, vigorous trees are often spoilt by severe pruning, which causes the tree to grow rank and unfruitful; nevertheless, when the tree is young, pruning is necessary to preserve a proper balance of growth, and must be practised until the tree is fairly well established. Afterwards, extra-strong shoots should either be removed entirely or cut back to a lateral, but care must be taken not to thin the shoots unduly. Crowded branches and such as cross each other should be cut clean out at the base, trimming the cut surface with a sharp knife and painting it with white lead. It it better to spread the work of thinning the branches over a few years than to remove too many at once, but weak and sappy growths in the centre of the tree should be removed forthwith. Bush trees of Apples and Pears which have been summer pruned will need little pruning now, beyond removing a few of the stronger growths and side shoots.

WINTER WASH.—Old trees, growing in shady situations or in crowded orchards, are often infested with moss and lichen, especially where the ground is not properly drained, for stagnant soil is the most frequent cause of this infestation: on land that is drained these pests usually disappear after a time. An old-fashioned remedy is to dust the infested limbs with quicklime, choosing a still morning when the trees are damp, but with hopes of a fine day to follow. Another method is to mix the lime with water and apply it by means of a brush, first scraping off as much of the infestation as possible with a piece of hard wood sharpened for the purpose. The most effective method of destroying the moss is to spray with caustic alkali wash. This strong specific should only be used when the buds are perfectly dormant, as it kills green vegetation. Apply the wash on a mild, calm day, when the bark is moist, but not during frosty weather. The operator should wear rubber gloves and an old suit of clothes. Take care that none of the spray drips on other plants growing in the neighbourhood of the trees. The wash should be warmed to 110° Fahr., and it is an advantage to have a portable copper, so that the water may be heated on the spot. The wash should be applied as a fine spray, taking care to wet the whole of the branches thoroughly. If the work is done efficiently, the trees will be cleaned perfectly. Do not use the knapsack sprayer, as the caustic alkali destroys the rubber connections; an ordinary syringe in a practised hand is quite suitable. If American blight only is present, spray the trees with paraffin mixed with soft water, or wash the branches with Gishurst Compound. Painting the affected parts with methylated spirits is a certain remedy, but it is a slow and tedious process.

FRUITS UNDER GLASS.

By JAMES WHYTOCK, Gardener to the Duke of BUCCLEUCH, Dalkeith Palace, Midlothian.

FIGS.—The cultivation of Figs under glass has increased during recent years, and these fruits are now regarded as being as important as Peaches or any others that are forced. In order to obtain the best results, the trees should be grown in houses by themselves. Provided the right conditions are afforded, the Fig may be forced very easily; the chief requirements are a moderate temperature and an almost constant circulation of air. The earliest fruits are obtained from trees in pots, which should have been placed in the house at the beginning of December. A mild bottom heat should be provided and the temperature maintained at 50° to 55°, raising it to 60° when the fruits appear. Maintain atmospheric moisture by syringing and damping the bare spaces, but do not promote too much moisture, or it may cause the fruits to drop. The Fig is very subject to attacks of red spider, but this pest may be kept in check by syringing and damping. Houses with permanent trees may be started, but the temperature should not exceed 50° for the present. Before forcing is commenced, prune and cleanse the trees thoroughly and put the house in proper order. Shoots of a medium size are the most fruitful. The border should be inside the house, and should not afford too great a root run; the width may be from 4 to 5 feet, according to the extent of the roots, and the depth 2 feet. It should be well drained, as the Fig requires plenty of water when in active growth. Let the soil be of a porous nature, containing lime rubble. Apply top-dressings of manure when the fruits are swelling.

PEACHES.—The later Peach houses should be got in readiness for forcing. In many cases the wood failed to ripen well last season, and this fact must be taken into consideration when the trees are pruned. Unfruitful trees that have expended their energies in the development of gross wood, should be root-pruned. Take out the soil without damaging the roots more than is unavoidable, and sever the large main roots, arranging the others near to the surface to encourage the development of root-fibres. Plants that have been unsatisfactory or are exhausted should be discarded and fresh specimens planted. Reserve trees should always be available for the purpose: if these have been trained on walls out-of-doors and have grown to a good size, they will furnish the space almost at once. In one instance I shifted such a tree in March, when it was in bloom: it was shaded for a time, and experienced so little check that the flowers set and fruits ripened the same season. Trees in the earliest house have set their fruits; therefore, the atmosphere may be kept closer and warmer than when the plants were in bloom. These conditions can be maintained until the fruits have swelled considerably, but do not syringe the trees to excess in cold, sunless weather, nor keep the surface of the borders too moist. Place a little quassia extract in the water occasionally when syringing to destroy any aphides that may be present.

LATE VINERIES.—Any Grapes that are still hanging should be removed from the vines, and, if not required for immediate use, placed in the fruit-room. If the stalks are placed in bottles of water, the berries will keep fresh for a long time. The ventilators of the vinery should be opened fully and the house kept as cool as possible. The inside border should be examined, to see if water is necessary: if the soil is dry, water the roots copiously. But if it is decided that the border is moist enough, withhold water until the vines have started into growth. The proper condition of the border is of the utmost importance, and more failures in Grape growing may be traced to unsatisfactory conditions of the roots than to any other cause. On the whole an excess of moisture in the soil is more harmful than a deficiency. If any additions or improvements to the border are contemplated the work should be done now. When this is completed, a top dressing of turfy loam, mixed with a suitable fertiliser, should be applied before the vines are started. In pruning remove any loose bark but do not scrape the rods severely: only scrub the stems with Gishurst Compound. If the vines are infested with insects fumigate the house and paint the rods with a suitable specific. At the same time give the interior of the vinery a thorough cleansing.

THE FRENCH GARDEN.

By PAUL AQUATIAS.

FOREWORDS.—The grower having definitely decided what crops he will cultivate this season, must allot his forcing materials accordingly, to secure a constant succession. Nothing militates more against success than neglecting to draw up a proper plan of the year's work. With plenty of decayed manure available there should be no great difficulty in obtaining excellent and early produce.

UNHEATED FRAMES.—The ground allotted to these having been prepared by deep digging some time previously, the frames should be set in rows, allowing a path 10 to 12 inches wide between them, and sunk 1 or 2 inches into the ground, sloping from back to front to allow the rains to run off the glass. They should then be filled with six or eight barrowloads of well-decayed manure from last season's hot-beds, and, when the dung is made level, there should be only 3 inches head-room for the plants. Radishes or Spinach may be sown broadcast very sparsely and covered with a thin layer of fine soil. Lettuce "Passion" may be grown at the rate of 75 plants per frame of three lights, or Lettuce "Little Gott" 70 per frame. After having removed all decaying outside leaves, the lights are placed on the frames, no attention being required for a few weeks except covering the glass during times of frost.

HOT BEDS.—We are forming the bulk of the hot-beds this week, using half fresh manure and half-dry manure stacked since last autumn. The beds are 5 feet 6 inches wide, the width of one frame. Both manures are well mixed together and placed evenly to a thickness of 11 inches. It is unnecessary to throw the manure in heaps and mix it two or three times at regular intervals, which is often advised, because fermentation at this time of the year is exceedingly slow and will not injure the plants. When the bed is well trodden down, the frames are set straight and level and made firm at the corners; a thin layer of manure is placed inside them to make an even surface. Next, old, decayed manure or "black" soil is placed to a depth of 1 or 2 inches. Carrot Early Parisian or Bellot is sown very thinly and covered with fine soil. Seven rows are made to mark the place of the Lettuces, and the lights are set on the frames. A few Radish seeds may also be inserted, but with the quantity of "black" soil, it will be found more profitable to increase the number of Lettuces in each frame instead. When the manure begins to ferment, plant the Lettuces at the rate of 147 per frame or 21 per row. I have tried different varieties for several years, but none has equalled Little Gott.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS, 41, Wellington Street, Covent Garden, London.** *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

Special Notice to Correspondents.—*The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

Illustrations.—*The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable plants, flowers, trees, &c., but they cannot be responsible for loss or injury.*

Local News.—*Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.*

Newspapers.—*Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see.*

APPOINTMENTS.

MONDAY, JANUARY 13—
United Hort. Ben. & Prov. Soc. meet.

TUESDAY, JANUARY 14—
Scottish Hort. Assoc. Ann. Meet. Nat. Amateur Gard., Assoc. Ann. Meet. Royal Institution meet. (Lecture by Prof. W. Bateson, F.R.S., on "The Heredity of Sex and Some Cognate Problems.")

WEDNESDAY, JANUARY 15—
North of England Hort. Soc. meet. at Leeds. (Lecture by Mr. R. Farrer on "Treasures of the Alps.") Royal Meteorological Soc. meet.

THURSDAY, JANUARY 16—
Linnean Soc. meet. Royal Inst. meet. (Lecture by Mr. Seton Gordon on "Birds of the Hill Country.")

FRIDAY, JANUARY 17—
Royal Inst. meet. (Lecture by Prof. J. J. Thomson.)

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich—38·2.

ACTUAL TEMPERATURES:—
LONDON.—*Wednesday, January 8* (6 P.M.) Max. 47°; Min. 42°.
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—*Thursday, January 9* (10 A.M.): Bar. 29·8°; Temp. 47°; *Weather*—Fine.
PROVINCES.—*Wednesday, January 8:* Max. 49° Mayo; Min, 42° Shields.

SALES FOR THE ENSUING WEEK.

MONDAY AND WEDNESDAY—
Rose Trees, Fruit Trees, Begonias, &c., at Stevens's Auction Rooms, 38, King Street, Covent Garden, at 12.30.

MONDAY AND FRIDAY—
Herbaceous Plants and Perennials, Hardy Bulbs and Lilies, at 12; Roses and Fruit Trees, at 1.30; at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

WEDNESDAY—
Hardy Bulbs and Roots, Perennials and Herbaceous Plants, Lilies, &c., at 12; Special Sale of Roses, at 1; Palms and Plants, at 5; at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

The Suburban Garden.

The problem of the small suburban garden is not yet solved. Here and there the ingenuity and good taste of the owner contrive results which are at once distinctive and beautiful; but for the most part such gardens are laid out on lines as narrow as themselves, and the strips of grass show by their trim or untended state the relative extent to which the possessors have abandoned hope of triumphing over circumstance. For truly circumstance is not in favour of the small, semi-detached suburban garden, and adverse circumstance takes many forms—the owner's dog, the neighbour's cat, the exigencies of the household, the smoke of the atmosphere, and the intermittence of labour either of the owner or the hired gardener. The problem of the small suburban garden must ever remain insoluble unless the owner is himself a keen gardener, or unless the landscape gardener discovers—as some day he will undoubtedly—that in the suburban garden there is in very truth an untilled field for his systematic labours, and a source of wealth as well. He will then undertake to plan and maintain the garden at a relatively small cost. Were he to do so it is certain that the gardens would be more beautiful, and that thousands of indifferent folk would become fascinated by gardening. He might appeal, and by no means in vain, to the pride of home which is latent in every Englishman and patent in every Englishwoman. But we recognise that to till this field the landscape gardener requires a rare combination of remarkable qualities, and that his work might after all be more effective in a missionary than in a monetary sense.

Nevertheless, as pointed out in an interesting article on the suburban garden in the **Architects' and Builders' Journal*, examples not only of isolated successful suburban gardens, but also of whole series of such gardens are to be found. For example, those of the garden suburb of Hampstead have shown that the triumvirate which rules so many gardens with despotic and undistinguished rule, the Pelargonium, Daisy and Lobelia, to wit, have been dethroned there, and in their place, as the writer remarks, Lupins and Larkspurs, Monkshood and Mulleins, Pinks and Primulas, Columbines and Campanulas hold welcome sway.

As pointed out in the article to which reference has been made, the suburban gardens of England suffer from yet another drawback, the dividing wall of brick which keeps the narrow border dry, and may, of course, also screen the plants from the sun. America has vetoed the dividing wall, and the gardens are in free communication with one another. Here and there, it is true, the American owner evinces the remains of a leaning towards individualism by planting a hedge, but for the most part he is content to gain the sense of space at the sacrifice of the symbol of possession. He would be a rash man, however, who advocated the removal of the boundary fence or wall from the gardens of this country. They are what those of us who dwell in the suburban houses are accustomed to, and custom demands our acquiescence; and yet, though he shrank from the rôle of reformer, no one who has seen the oblong boxes at the back rows of houses such as may be peered into as the train approaches a London terminus—no lover of gardens could refrain from shuddering at the sight of so much squalor, emphasised by chlorotic Pelargoniums. Then, as they reel past him, the traveller sees among these gardens one owned by a man with the gardener's touch and bright with things in flower. He realises what might be done if only custom could be exorcised, and the neighbours of the gardener brought to understand that systematic neglect is not the basis of success in gardens. What a hopeless problem it is, this unnecessary squalor of our inner ring of London suburbs in which we acquiesce. Yet, after all, the problem of the suburban garden cannot be insoluble, for is not the cottage garden a triumphant vindication of the natural love of plants and of gardening inherent in the hearts of Britons? Nor is this the sole ground of encouragement. The great houses of London in Mayfair have at last realised that the backyard need not be left desolate, and now many an erstwhile back yard of a London mansion, instead of being hidden by thick glass or curtains, has been transformed into a formal paved space, with vases, and statuary, and tubs bright with plants, and often a loggia lit at night with cunning and alluring electric lamps, which invite the inmates to venture out and enjoy the sense of space which every gardener, however small, should contrive to beget in the heart of its owner.

* Vol. 36, No. 932.

Coloured Plate.—Our coloured Supplement shows a flowering shoot of Allamanda Hendersonii, a well-known stove plant. In the days when collections of flowering stove and greenhouse plants were important features at horticultural shows, Allamandas were pre-eminent. Their companions were Dipladenias, Bougainvilleas, Eucharis, Ixoras, Hippeastrums, and other large-flowered plants which were grown with extraordinary success. Those days were at least a quarter of a century back, when the cultivator's art found expression in the production of large trained specimens. Climbers, including the Allamandas, were trained on balloon-shaped trellises, and they were remarkable for the number of flowers upon them. Such specimens are rarely seen now. The plants are grown here and there on more natural lines, Allamandas as pillar or rafter-plants or against the gable-end of a warm house, positions in which they certainly have a more decorative appearance. When large-flowered scandent shrubs are desired there are few better plants than A. Hendersonii. It is doubtfully distinct from A. Schottii, introduced in 1847 from Brazil and flowered in Henderson's nursery, St. John's Wood, in that year. Botanically it is considered to be a variety of A. cathartica, as also are A. grandiflora, A. neriifolia, and A. violacea, the last named being, as its name denotes, a purple variety, all other Allamandas being yellow. A. Hendersonii is probably the showiest of them all; it is certainly the easiest to cultivate, and it flowers profusely for about six months in the year. Planted in a border of rich loamy soil, it starts into vigorous growth in spring and under favourable conditions develops shoots many feet long in a few months. The flowers are borne in clusters on lateral shoots, and although they have a floppy, ephemeral look they last for some days when cut and placed in water. As winter approaches the plants should be allowed to get dry at the roots and remain so until about the middle of February, when they should be severely pruned on what is known as the short-spur system, and encouraged to start into vigorous growth. The usual watering and syringing and a temperature ranging from 65° to 75° Fahr. are all that are required to induce free growth and a production of flowers. In tropical countries Allamandas are grown as shrubs supported by a stout stake, the shoots being pinched now and then to induce a bushy habit. Thus treated they are particularly effective. Where space cannot be afforded for A. Hendersonii the smaller-growing A. grandiflora may be grown. This has much thinner shoots and rather smaller leaves and flowers, the latter being of a pale yellow colour. The purple-flowered A. violacea is a distinct and decidedly attractive stove plant.



ALLAMANDA HENDERSONII, A STOVE CLIMBING PLANT

GARDENERS' ROYAL BENEVOLENT INSTITUTION.—The seventy-third annual general meeting of the members and subscribers of this institution will be held at "Simpson's," Strand, on Thursday, the 23rd inst., at 2.45 p.m., for the purpose of receiving the report of the committee and the accounts of the institution (as audited) for the year 1912, electing officers, and for the election of 20 annuitants. There are 67 candidates. The chair will be taken by Sir HARRY J. VEITCH, treasurer and chairman of committee, at 2.45 o'clock. The poll will open at 3 o'clock and close at 4 o'clock. During the year 1912, CAROLINE MORRIS, HARRIET SAWYER, JANE HOLE, and CHARLOTTE BRADBERY, widows of annuitants, were placed on the funds without election in accordance with Rule III, 13.

THE PERPETUAL-FLOWERING CARNATION SOCIETY.—We are asked to state that this Society has determined that a subscription of 2s. 6d. per annum shall entitle head gardeners who live upwards of 200 miles from London to be elected as associate members, and this boon is extended to foremen and journeymen gardeners, irrespective of the 200 miles limit. Associate members may attend any of the society's meetings but cannot vote, and are not eligible for office. They will be entitled to one non-transferable ticket for each show, and a copy of the *Carnation Year Book* published annually.

SURVEYORS' INSTITUTION.—The next ordinary general meeting of this Society will be held at the Institution on the 13th inst., at 8 p.m., when the adjourned discussion on Mr. E. M. KONSTAM's paper on "Land Values Taxation: a Criticism of the Evidence before the Departmental Committee on Imperial and Local Taxation," read at the meeting of Monday, November 25, 1912, will be resumed.

ROYAL METEOROLOGICAL SOCIETY.—The annual general meeting of the Society will be held at the Surveyors' Institution, 12, Great George Street, Westminster, S.W., on Wednesday, the 15th inst., at 7.30 p.m. An ordinary meeting will subsequently be held, when a paper on "The Snowfall of the United States" will be read by Mr. CHARLES F. BROOKS.

NEW SECRETARY OF THE BOARD OF AGRICULTURE.—The Government has appointed Sir SYDNEY OLIVIER, K.C.M.G., Governor of Jamaica, Permanent Secretary of the Board of Agriculture, in place of Sir THOMAS ELLIOTT. Sir SYDNEY OLIVIER was born in 1859, and is the son of Rev. H. A. OLIVIER, of Winchfield, Hants. In 1882 he entered the Colonial Office, and in 1896 was appointed private secretary to Lord SELBORNE, who was then Under-Secretary for the Colonies. The new Secretary was appointed Governor of Jamaica in April, 1907. He is credited with remarkable powers of organization.

A NEW HARICOT.—The value of Tepary (Phaseolus acutifolius, Gray, var. latifolius) is the subject of a communication addressed by Mr. WALTER SWINGLE to the *Revue Horticole de l'Algerie*. According to Mr. FREEMAN, of Tucson, Arizona, the Bean grows in the desert region of the S.W. States of America, and has been cultivated by the Indians from time immemorial. This species yields far better than ordinary Haricots—at all events in warm and semi-desert regions, and the plant, as is to be expected, is very resistant to drought. Tepary forms a large part of the food of the Papago and Pima tribes of Indians, whose powers of endurance of fatigue are attributed to the dietetic qualities of this plant.

THE PIGMENTS OF FLOWERS.—Among the contributions to the current number of the *Journal of Genetics* (November, 1912) is a paper by Professor KEEBLE and Dr. E. F. ARMSTRONG on the mode of formation of flower colour. It might at first sight seem surprising that biochemists have not yet succeeded in understanding the precise chemical processes to which the formation of flower pigments is due. But as those know who have worked at this problem, it is by no means easy of solution. Nature, so lavish in some respects, uses her pigments in the most parsimonious manner, contriving, nevertheless, to produce the wonderful results with which we are all familiar. The investigator, unable to obtain large quantities of flower pigment, is compelled to attack the problem of its formation in another way, namely, by endeavouring to produce the pigments artificially, or by attempting to make the plant produce its pigments by treating with various re-agents. As the result of the latter method it has been shown that the red and purple and other anthocyanin colours of flowers and fruits are produced as the result of an oxidation of a colourless chromogen. That this is actually the case is proved by the authors above cited. They show that wherever pigment occurs there also the special oxidizing agent is also present. In stripic flowers the coloured areas possess the oxidizer and the white areas do not. Moreover, they further prove that, in dominant white flowers of Primula sinensis, the oxidase or oxidizing agent, though present, is prevented from acting by a definite chemical substance. They show that, by treating the petals of dominant white flowers with certain chemical re-agents the inhibiting or checking substance, which prevents the oxidase from making pigment, may be removed. When the preventer or inhibitor of oxidation is thus turned out of the petals, the latter are able to oxidize a colourless chromogen, and so convert it into pigment. It is probable that all pigment formation is the result of a struggle as it were between oxidizing agents and agents which check their action. Hence it is not surprising that the amount of pigment produced—as, for example, in Apples—may vary considerably with methods of cultivation and with the seasons. The biochemist has still a good deal to do before he will be able to advise the



FIG. 16.—ECHIUM BOURGEAUANUM IN A TENERIFFE GARDEN.

(See p. 19.)

horticulturist how pigment formation may be hastened or increased; but the chemical knowledge of this process is advancing, and we are not without hope that, in course of time, the knowledge may prove not only of scientific interest but also of practical value. The paper by Professor KEEBLE and Dr. ARMSTRONG is illustrated by a coloured plate, the excellence of which reflects great credit on the draughtsman and on the Cambridge University Press.

GIFT OF A PARK TO DUNDEE.—Dr. J. KEY CAIRD, whose name appeared in the New Year Honours list amongst the new baronets, had presented a park to the inhabitants of Dundee. A special meeting of the town council was held on December 31, when Lord Provost URQUHART announced the offer of the park, which was unanimously accepted. The new park, which has been acquired at a cost of £15,000, is at the east end of the city, and comprises 158 acres.

BAMBOO POTS.—D. PEREZ, of Teneriffe, describes in the *Journal of Horticulture of France* (November, 1912) the use which is made at the Cape and in Ausfralia of pots made from sections of the stem of the great Reed (Arundo Donax). From his account it appears that the pots are used extensively for the planting of Acacias and in the propagation of Eucalyptus. The room taken up by the pots is very small; the pots themselves are not fragile, hence are excellent for transport purposes. Dr. PEREZ speaks highly from personal experience of these substitutes for ordinary pots. He finds that they serve admirably for striking cuttings of such subjects as Atriplex. The device was first adopted by the Portuguese in India, and since they no doubt used Bamboo stems for the purpose, the name Bamboo pots is explained.

TENTH INTERNATIONAL CONGRESS OF AGRICULTURE.—The Tenth International Congress of Agriculture will be held at Ghent, Belgium, from the 8th to the 13th of June next. The work of the Congress will be classified under the following five heads:—(1) rural economy; (2) science of agriculture, special crops, and agricultural education; (3) cattle breeding; (4) agricultural engineering; and (5) forestry. The opportunity of visiting the International Exhibition, which will include large and important sections dealing with agriculture and country life, will make the Congress one of special interest. A British Committee, under the chairmanship of Sir GEORGE FORDHAM, is being formed to secure adequate representation of this country at the Congress. Further particulars may be obtained from the Secretary to the British Committee, Craven House, Northumberland Avenue, W.C.

EXTRACTION OF PINE SEEDS.—*The National Nurseryman* gives details of experiments conducted by the American Forest Service in extracting seeds from Pine cones. A machine, resembling a modified grain thresher, has been used for threshing white Pine seed from the cones when the latter were partially dry. It is thought that by further modifying an arrangement of the teeth in the cylinder seeds may be successfully threshed from the cones of such trees as yellow Pine, Douglas Fir, and even Lodgepole Pine. If this proves possible, the capacity of a seed-extracting plant can be increased to ten times its former output. The chief difficulty to overcome is the cracking and spoiling of the seeds during the process of threshing.

HONOURING AN APPLE.—The *National Nurseryman*, U.S.A., states that an interesting ceremony occurred near Morrisburg, Ontario, on June 8, when a monument was unveiled to an Apple tree. The farmers of Dundas, Ontario, raised the money by popular subscription, and placed a marble stone close to the spot where the original McIntosh Red Apple tree grew. The old tree stood for over a century and then fell. The history of this Apple is as follows:—About 115 years ago Mr. JOHN MCINTOSH, who went to Canada with the United States Loyalists, and settled in Matilda Township, found a number of young Apple trees while clearing a place for a home. These he preserved. One of them produced fruit of such superior colour and quality that he named it McIntosh Red. In 1893 the old tree was partly injured by fire, but continued to bear on one side until 1908, when it failed for ever.

PUBLICATIONS RECEIVED.—***Bitter Pit Investigation.*** The Past History and Present Position of the Bitter Pit Question, by D. McAlpine. First Progress Report, 1911-12. (Melbourne: Albert J. Mullett).—***Proceedings and Journal of the Agricultural and Horticultural Society of India.*** (January-June, 1912.) Secretary, Mr. F. H. Abbott, Udaipur.

PLANT NOTES.

ABUTILON INSIGNE.

SOME of the more vigorous of the garden forms of Abutilon are justly regarded as desirable subjects for furnishing the roof and rafters of a greenhouse or conservatory, as under such conditions they flower freely, and from the pendulous nature of the blossoms they are in this way seen to the best advantage. In all respects except the colour of the flowers these garden varieties bear a strong family likeness. It is, however, different in the case of some of the species, and A. insigne, can be recommended as equally suitable for training to a roof, while it also possesses the merit of being perfectly distinct from any other member of the Abutilon family. In the first place the large, heart-shaped leaves are of a thick rugose character, and the flowers, which are freely borne, and that, too, over a considerable period of the year, are of a very open bell shape, with the edges of the petals reflexed. The colour is a kind of purplish crimson, with very dark veinings. This Abutilon, which is a native of Colombia, was introduced in 1851, but it would appear to have been almost lost till renewed attention was directed to it about 30 years ago. There is a variety named aureum marmoratum in which the leaves are marbled with yellow, but the variegation is not sufficiently clear to be effective.

CROWEA SALIGNA.

IN the days when hard-wooded plants were popular this Crowea was extensively grown, frequently as specimen plants. Then nearly all of this class lost their position in gardens, but within the last few years an increased amount of interest has been taken in some of them. Among those affected by this partial revival must be included Crowea saligna, which doubtless owes its present-day interest to the showy nature of its bright pink blossoms, and the fact that they are borne throughout the winter months, when flowers in the greenhouse are always appreciated. This Crowea forms a freely-branched shrub of an evergreen nature. The leaves are somewhat Willow-like, hence its specific name. It is also known as Crowea latifolia. It is a native of New South Wales, and was introduced in 1790. A second species, C. angustifolia, a quite distinct species, has linear leaves, and the segments of the flower correspondingly narrow, added to which its usual season of blooming is in the spring, when the long slender shoots, wreathed with their starry flowers, form a very pleasing feature. This species is a native of Western Australia. In order to flower Crowea saligna throughout the winter months a structure maintained at a temperature of 50° to 60°, and a light, buoyant atmosphere, are necessary.

CENTROPOGON LUCYANUS.

SIGNS are not wanting of a revival in favour of this pretty winter and spring-flowering plant, which, despite its value in this respect, has for a long time suffered some neglect. At the last meeting of the Royal Horticultural Society some flowering examples of this Centropogon were very bright and showy. It belongs to the order Campanulaceæ, and is of a soft half-shrubby character. The branches are naturally of an arching or partially drooping habit of growth, and this is increased when the flowers, which are borne at the points of the shoots, are developed. These flowers, which are a couple of inches or more long, are of a curved tubular shape, and bright rosy-carmine in colour. It is readily propagated by cuttings of the young shoots, taken in the spring, and placed in a close propagating case with a gentle bottom heat. The young plants may be grown in a warm structure for a time, but during the summer they succeed best in a frame. A light soil such as equal parts of loam and leaf-mould, with a good dash of sand, will just suit this Centropogon. During their growing period the young plants must be stopped once or twice in order to induce the production of side shoots. When grown in pots the branches as they develop will need to be supported by stakes, but the plant is also well suited for growing in a suspended basket, for which purpose its drooping habit eminently fits it. In winter a minimum temperature of 50° to 55° is necessary. *W. T.*

NOTICES OF BOOKS.

THE PLANTERS' NOTE BOOK.*

THERE is nothing adds so much to the interest of a collection of trees or shrubs as the fact that the history of each specimen can be traced from records made by the planter. Each tree has then an individuality of its own, and ceases to be merely an item in the production of a general effect. We are grateful to the planters of an earlier age, but how much our interest in the trees they planted would have been enhanced had they kept records of their work, showing the day a tree was planted, whence it came, its rate of growth, and so on. Mr. Woodward, the designer of *The Planters' Note Book*, has himself set a good example in the *Hortus Arleyensis*, wherein is placed on record much information about the fine collections at Arley Castle, near Bewdley. Mr. Woodward has designed the small volume under notice for the use of planters of hardy trees, shrubs and plants who may desire to keep records of the specimens they plant. Each page is devoted to one tree or plant, and is conveniently spaced so that the planter can record the identifying number of the tree, the date it was planted, its origin, its scientific and common names, its native habitat, and particulars as to soil, situation and aspect. This much occupies half the page. The other half is left to put on record its subsequent history; such, for instance, as its increase from time to time in height and girth, the date of its first flowering or developing fruit, and so on. One suspects that it has been the initial trouble of getting a note book, ruling it, paging it, &c., that has caused so many to neglect the task of keeping records. There is now no longer that excuse, for in this neat little book the planter has it already done for him. It is of a handy size to put in the pocket for carrying about the garden, and has a binding of leatherette. Pages are ruled for the record of unusual temperatures and rainfalls, and for indexing. I can recommend *The Planters' Note Book*, for it represents a happy idea, admirably carried out. *W. J. B.*

* *The Planters' Note Book*, by Robt. Woodward, Junr.; pp. 124, small 8vo.; price 1s., post free 1s. 1½d. London: *Gardeners' Chronicle*, Ltd., 41, Wellington Street.

LINDENBERGIA GRANDIFLORA.

THIS is a valuable plant for winter flowering. It lasts in good condition for about three months, and is quite easily cultivated. The accompanying illustration (see fig. 17) is reproduced from a photograph, and proves the decorative qualities of the species. The plant was introduced to the Cambridge Botanic Garden by seeds from Calcutta, and was figured in the *Botanical Magazine* in 1900, tab. 7738. Ever since it has been a feature of the conservatory each winter. It is really a greenhouse plant, and should be grown in greenhouse temperature throughout the year. In the *Botanical Magazine* it is described as an annual, but this results no doubt from some wrong record. The plant is really a perennial, though its cultivation should be of annual character, as in the case of Chrysanthemum and some other decorative subjects. After the plants have flowered they are cut back, cuttings are put in as soon as ready, and two or three plants in a pot make good specimens. The one illustrated is made by two plants in an 8-inch pot. It is 2 feet 6 inches high and about 18 inches through. Some of the plants are 3 feet 6 inches high. The flowers are pale-yellow in colour, very similar to those of the Musk plant, the flowers having a somewhat similar appearance but very much larger, measuring nearly an inch across. Cut sprays last well in water, but the colour is unsuitable for artificial light. The plant is a native of the Himalayas, and is common on the hills from Simla to Bhotan, at elevations of from 2,000-6,000 feet. This species is the most ornamental of the genus. A further point worth mention with regard to cultivation is that the species appears to like shade in summer, but it is so easily grown that when its nature is once realised there can be no difficulty. The soil found to answer here is sandy loam with some peat. *R. Irwin Lynch, Botanic Garden, Cambridge.*



[Photograph by R. Irwin Lynch.

FIG. 17.—LINDENBERGIA GRANDIFLORA.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

RHODODENDRON PONTICUM VAR. AUCUBÆFOLIUM.—The note by Mr. Cook in the issue for December 28, p. 487, reminded me of the origin of R. aucubæfolium, and the following short note about it may, I think, be of interest to your readers. Mr. Botting Hemsley described the so-called R. aucubæfolium some years ago in the *Journal* of the Linnean Society from a dried specimen collected by Mr. Henry in Central China, and at the time he had every reason to believe it was a genuine specimen. This, however, proved false; the specimen eventually turned out to be a "make-up," one of Mr. Henry's coolies having very cleverly united the flowers of R. pittosporæfolium with a leafy portion of Daphniphyllum macropodum. I recently saw in a garden near here a variegated Rhododendron, such as Mr. Cook describes, and which I took to be R. ponticum var. variegatum. On making inquiries about this plant I was told that it had only assumed the variegated or diseased appearance during the last two or three years, and that when originally planted it bore normal and healthy foliage. Near by were growing several other varieties of Rhododendron with green foliage, all of which looked happy and robust. These shrubs, including the variegated one, were, I was informed, planted at the same time in the same kind of soil, which is of a peaty nature, and that the roots receive periodically a mulch of decayed manure. I was unable to obtain the varietal name of the variegated shrub when received from the nursery. The variegation of this shrub was good as variegation goes, but it appeared to me to be misplaced in the genus Rhododendron, and what the contrast of colour would be like when the shrub is in flower I leave to the imagination, never having seen it. *Geo. B. Milne-Redhead, Millard's Hill, Frome.*

HAMAMELIS MOLLIS.—Surely Mr. Fitzherbert (see p. 4) does but scant justice to this beautiful shrub when he says the flowers "are as large as, or probably larger, than those of H. arborea." They surpass the older species in every respect, being fully twice the size, making a far more brilliant display and being quite as freely produced. I used to consider H. arborea the pride of the winter shrubbery, but now it looks almost dingy beside the Chinese Witch Hazel. The blossoms have the same remarkable power of resisting cold. The first blossoms this year had to encounter 19° of frost about a month ago, which they endured without their beauty being dimmed, though Jasminum nudiflorum was denuded of bloom. Altogether, I give the first place to H. mollis among the shrubby subjects that have come to us of late years from the Flowery Land. Care is necessary with plants grafted on the other species to prevent the stock throwing up growth to the detriment of the scion. *Herbert Maxwell.*

THE CABBAGE ROOT FLY.—I read with interest the article on economic entomology (see p. 489), and am prompted to state my own observations on the subject. The life history of the cabbage root fly has been recorded by many, including Mr. F. V. Theobald, Mr. Walter Collinge, and Miss Ormerod. Mr. Collinge, in his report for 1906, stated that this pest was particularly prevalent in the Midland counties. Mr. F. V. Theobald in his report, 1907, recorded that a correspondent living in the Isle of Grain, Rochester, had nearly the whole of his crop of Turnips affected. From information and observation this pest not only attacks the Cabbage, but many other members of the Brassica family in the gardens under my charge in autumn, and under glass in the early spring. We make sowings of various Brassicas, including Cabbages and Cauliflowers, and I have noticed for several seasons that this fly has special preference for the Cauliflowers in the spring-time. Mr. Collinge, quoting Washburn, in his report for 1906, states: "The female early in May deposits about 50 eggs either on the ground near to the plant or upon the plant stem, and these eggs hatch out in about seven or eight days. Generally the female lays a single egg in a place, and the larvæ are full fed in about 21 days. Many of the grubs remain in the pupal stage from a fortnight to several months." As regards my own observation, I have not found the eggs on the ground, but always on the stem of the plant near or slightly below the surface of the ground. I have the stems of two young Cauliflower plants from the seed bed, one of which had five and the other four eggs upon them. They are in a fluid medium, and I have had them for some time. Some of the eggs have become detached, but three still remain on one of the stems, and the rest are floating in fluid. I obtained a good photograph of the eggs whilst they were fresh. They are about 1-30th of an inch in length, slightly curved and tapering to each end, somewhat roughly furrowed, and white. When the larvæ hatch out they eat around the stem of the plant, leaving the vascular tissues intact. Sometimes the young plants survive the attack by forming roots as by notching or layering. We had a number of Brussels Sprout plants destroyed by this pest in the autumn when the plants were almost fully developed, and I secured a number of the pupa which I took off the plants as larvæ on October 1. They are in a suitable vessel under observation so that I may determine the date of emergence of the fly from this winter brood. As regards the summer broods they are hatched from April to October. I notice that the Rev. Hilderic Friend suggests placing the roots in some material that will have the effect of destroying the eggs, and I should like to know what the preparation is. The better plan would be to prevent the eggs being laid; it is not difficult to notice when plants are affected by the maggot of the cabbage fly, and as the attack is not simultaneous the remedy may be applied as soon as the first plant is observed to flag. The better plan is to water the young plants in the

seed bed before they are affected, and then, at planting time. I have found Vaporite effectual, half an ounce to one gallon of water. I put a portion of the Vaporite in boiling water, and then make up to the full strength with cold water. This can be repeated in, say, a fortnight after the first application. Very dilute crude carbolic acid is also useful at a strength of a teaspoonful to one gallon of water, not more. These insecticides will also prevent attacks by other apterids. Mr. Friend speaks of four species of mites and three species of white worms. I have been wondering what they could be. There are numerous apterids in most soils containing organic matter. *J. G. Blakey, The Gardens, Holmwood, Redditch.*

PLANTS IN FLOWER OUT-OF-DOORS (see p. 3).—I was much interested in the list of shrubs and plants in flower at Kew Gardens on Christmas Day. The following plants were in flower here on January 1:—Garrya elliptica, Daphne Mezereum, Corylus Avellana (female flowers), Anemone angulosa, Galanthus nivalis, Primula vulgaris, P. officinalis hybrida, P. o. "Miss Jekyll's," P. denticulata alba, Aubrietias Dr. Mules and Bougainvillea, and Alyssum argenteum, A. saxatile, Veronica and Teucrium. In hedgerows and fields Bellis perennis (Daisy) and Ranunculus repens were blooming abundantly. *John Edwards, Sylfain Gardens, Welshpool.*

CORSICAN PINE.—Will *A. D. W.* oblige by explaining upon what grounds he bases his statement in the *Gardeners' Chronicle* for December 21 that the timber of Pinus Laricio "has not come up to expectation," and is therefore not recommended for planting in this country. Very few trees of this species have reached maturity in Great Britain, and the trees are chiefly isolated specimens, like the fine one in Kew Gardens. How, then, is *A. D. W.* able to pronounce upon the quality of the timber likely to be produced in these islands? Of course, if he has sampled young trees, he is likely to have found them worth no more than Scots Pine of the same age; but the growth of P. Laricio is more rapid than the Scots Pine, and the timber produced in the Corsican forests is of such fine quality that Napoleon caused battleships to be built of it, and it is largely imported into Italy for shipbuilding at the present day. Mr. H. J. Elwes reported in 1907 that logs 23 feet long and 1 foot square at the small end "fetch at Bastia, after long haulage by road and railway, 36 to 40 francs per cubic metre, or about 10d. to 11d. per cubic foot. The timber is very strong, but heavy. . . When of the first quality, it is considered to be as good as American Pitch Pine." One advantage it possesses for British planters over every other forest tree, not excepting Sikka Spruce, is that, when first planted, it is practically immune from attack by hares and rabbits. It is not desirable that currency should be given to an unfavourable estimate of this most valuable tree by a writer who withholds the data for his judgment. *Herbert Maxwell, Monreith.*

———Those who contemplate planting the Corsican Pine should not take the remarks of *A. D. W.* about the growth of this species too seriously. After many years experience, I have come to the conclusion that it is the most profitable tree to plant, especially on an estate where a return in some form or other is looked for. I do not maintain that Corsican Pine is valuable from a timber point of view, especially for outside use, as compared to Larch, Oak or Ash, but for supplying timber for estate repairs it is the best tree to plant. Thirty-four years ago I planted Corsican Pine, Spruce, Scots Fir and Austrian Pine in batches in an old wood, cutting down the Oak and clearing the Hazel undergrowth. The trees were planted in rows 4 feet 6 inches by 5 feet, with no preparation to the soil, simply digging the holes as best we could among the roots of trees and Hazel stems; the trees made good progress, the Corsican Pines and Spruce Firs taking the lead. No thinning was done except the removal of an occasional dead tree and the careful trimming of the lower branches, as they died, up to 12 feet high. About six years ago our first thinnings were made from the Corsican and Spruce batches. Many of the former trees were 30 to 35 feet high (they are now 40 feet), with a diameter of 12 inches and 14 inches at the base. The stems were perfectly straight and clean in growth. From these were cut rafters 16 feet long, 4 inches by 3 inches, which, when seasoned, were most useful for estate repairs and new work indoors as shed-roofing, doors, frames, and even rafters for greenhouses. Many of the Spruce trees were used for making ladders and scaffold poles. The Scots Firs were the next most useful tree, but these grew irregularly. The Austrian Pines were the most useless of the batch, the trees growing crooked at the base and irregular. As Larch is not a success here as a timber tree, I would ask *A. D. W.* what tree he would recommend that will answer the same purpose as the Corsican Pine? *E. Molyneux, Swanmore, Hampshire.*

———One of the largest logs of the Corsican Pine that I have had converted was 18 feet in length, and contained fully 30 cubic feet of timber. The timber was used experimentally in many ways—for fencing, indoor furniture, and to support the banks of a rapidly-flowing river. The latter trial was most satisfactory; but in no case did the lasting properties of the timber come up to expectation. The estate architect, who also made use of the timber, reported to the owner of the property on which it was grown—"contains too much resin, and is apt to become honeycombed." *A. D. W.*



FIG. 18.—LINDENBERGIA GRANDIFLORA: FLOWERS YELLOW.

(See p. 27 and R.H.S. Awards, p. 29.)

RIPENED WOOD.—Mr. Small (p. 488, vol. lii) asks the surprising question, "What difference can it make to a tree in the production of fruit whether the wood be well ripened or not?" To some extent, no doubt, the importance of ripened wood has been overrated, but can anyone deny that this is one of the essentials in fruit culture? The writer seems to give his case away when he says: "The reason was an insufficiency of moisture at the roots," &c. No person of experience underrates the importance of root-pruning, watering, or summer pruning—it would be interesting to know if Mr. Small believes in the latter operation—but these things supply no reason for stating that ripened wood is of no account. The fruit crops, however, largely depend on weather conditions, which are outside the gardener's control, and Nature accomplishes much without his aid; this applies especially to the maturing of the wood. I entirely agree that fruit crops are better after a wet season But does anyone expect good results from fruit trees when light and sunshine—essentials to the formation of firm, ripe wood and high quality fruit—are almost absent? From my own observation, failure of the fruit crops is generally the result of unsuitable weather the previous season, as is proved by the average yield in the various districts from year to year. The splendid crops of fruit in 1911 were due in this district to the periods of sunshine, and copious rainfalls, in 1910; and the lesser crops of this year are not due to the fact of the wood being well ripened, but, as Mr. Small says, to insufficiency of moisture. *J. Lisney, Berwick House Gardens, Shrewsbury.*

SOCIETIES.

ROYAL HORTICULTURAL.

JANUARY 7.—The first meeting of 1913 was eld on Tuesday last in the Society's Hall, Vinent Square, Westminster. The display of Orchids was unusually excellent for a January xhibition, and the Society's Gold Medal was warded for a magnificent collection of Cypriediums shown by Mr. G. F. MOORE.

The ORCHID COMMITTEE granted one First-lass Certificate and eight Awards of Merit.

The principal exhibits in the floral section were Carnations, Primulas, Cyclamens, Camellias, Rhododendrons, and hardy plants. The FLORAL COMMITTEE conferred only one Award of Merit—o Lindenbergia grandiflora, an old garden plant.

The exhibits in the fruit and vegetable section were more numerous than usual: they included collection of Apples shown by Messrs. JAMES VEITCH & SONS, for which a Gold Medal was awarded. The FRUIT AND VEGETABLE COMMITTEE made no award to a novelty.

Floral Committee.

Present: Henry B. May, Esq. (in the Chair); Messrs. W. G. Baker, Chas. E. Shea, W. Bain, G. Reuthe, C. Blick, Chas. Druery, Chas. E. Pearson, Chas. Dixon, F. Herbert Chapman, W. P. Thomson, John Green, E. A. Bowles, W. J. Bean, J. F. McLeod, Wm. Howe, R. Hooper Pearson, R. Reginald Nevill, H. J. Jones, F. Page Roberts, Arthur Turner, W. J. James, E. H. Jenkins, George Paul, Ed. Mawley, and C. R. Fielder.

Messrs. SUTTON & SONS, Reading, showed excellent plants of their strains of Cyclamens in half-circular mounds, edged with Adiantum Ferns. There were numerous fine specimens of the beautiful Giant White variety, these forming bands to groups of Salmon Scarlet and Salmon Pink. Other batches contained Rose Pink, Vulcan (crimson), and Giant Crimson and White. (Silver-gilt Flora Medal.)

Messrs. H. CANNELL & SONS, Swanley, showed more than 30 varieties of Zonal-leaved Pelargoniums; the blooms were of remarkable size and the colours exceptionally bright. (Bronze Flora Medal.)

Mr. L. R. RUSSELL, Richmond, Surrey, illustrated, with a large batch of well-grown plants, the decorative value of Isoloma hirsuta. At one end of the Isolomas there were well-flowered plants of Azalea indica in variety, brightened by neat examples of the bright rose-coloured Azalea Hexe and three specimens of Tillandsia Duvalii, an uncommon Bromeliad, which bears large mauve flowers. The species differs from T. Lindenii in having a peacock-blue margin to the petals; the combination of mauve, peacock blue, and the pink of the scape is very charming.

Messrs. WM. PAUL & SON, LTD., Waltham Cross, showed some splendid little bush Camellias in full bloom. These were chiefly of the single and semi-double varieties, which are so valuable for planting in the open garden, and included such varieties as Waltham Glory (bright red), Tricolor (an appropriately-named sort), Vesta (rich crimson), and Snowflake. There were also plants of many double varieties which are more suitable for greenhouse cultivation. (Silver Banksian Medal.)

Messrs. JAMES VEITCH & SONS, LTD., Chelsea, showed an assortment of indoor flowering plants, for which a Silver Flora Medal was awarded. The collection included numerous plants of Erlangea tomentosa, with scented foliage and flowers like those of a Eupatorium; Freesias; a magnificent plant of Begonia Ensign arranged amidst the fine blue Coleus thyrsoideus, with the yellow Senecio grandiflora at the back; Ghent Azaleas, Primula malacoides, associated, and P. kewensis.

Messrs. W. CUTBUSH & SON, Highgate, made a bright show with forced plants, Carnations, and Alpines. A small rockery contained flowering plants of Iris Tauri, I. reticulata, I. Danfordii, I. histrioides major, Saxifraga Greisbachii, S. Boydii alba, and a large, white-flowered Helleborus niger. Amongst the Carnations were large blooms of Mrs. L. Mackinnon (scarlet), Lady Coventry (rich red, "Malmaison"), King Manuel (salmon), Lady Meyer (pink), and White Wonder. (Silver Banksian Medal.)

Messrs. J. PIPER & SONS, Bayswater, arranged a pretty floor group of Primula obconica rosea and P. malacoides, in a setting of shrubs and conifers disposed in rock work. (Silver Banksian Medal.)

Messrs. WHITELEGG & PAGE, Chislehurst, filled a long table with Primula obconica in batches of distinct shades, separated by clumps of P. malacoides. The best shades were rose and bluish-mauve. (Silver Banksian Medal.)

H. J. PITT, Esq., Stamford Hill, London (gr. Mr. Thurgood), showed 14 healthy plants of Agave Leopoldii, a species illustrated and described in the last issue, p. 11, figs. 10, 11.

Messrs. H. B. MAY & SONS, Edmonton, filled a table with greenhouse Ferns. The plants were splendid specimens, and included numerous genera and species. Amongst the finer plants were those of Drynaria quercifolia, Polypodium Mayi cristata, P. irioides, P. ramo-cristatum, P. Vidgenii, Asplenium marginatum, Platycerium Cordreyi, Gymnogramme grandicêps, G. superba, Adiantum asarifolium, Nephrolepis Rooseveltii, and Hymenodium crinitum. (Silver Flora Medal.)

D. MACMASTER, Esq., M.P., Merle Wood, Virginia Water (gr. Mr. E. C. Pigg), showed a batch of Freesia refracta alba of excellent strain and exhibiting good cultivation.

Mr. H. BURNETT, Guernsey, showed Carnations, for which a Silver Flora Medal was awarded. We noticed, as extra good, Shasta (white), Scarlet Glow, White Wonder, Benora, Lady Alington, and Lady Northcliffe.

Messrs. ALLWOOD BROS., Wivelsfield Nurseries, Haywards Heath, showed a very attractive exhibit of Carnations.

Messrs. STUART LOW & Co., Bush Hill Park, Middlesex, had a splendid array of Carnation blooms. The various stands contained beautiful blooms of Empire Day, Baroness de Brienen, Mrs. C. F. Raphael, Cinnabar, and Snowstorm. (Silver Banksian Medal.)

Messrs. W. WELLS & Co., LTD., Merstham, showed varieties of Perpetual-blooming Carnations. Northport is a new variety of American origin; the colour is the shade known as cerise.

Carnations were also exhibited by Mr. G. ENGLEMANN, Saffron Walden. (Silver Banksian Medal.)

Mr. CLARENCE ELLIOTT, Stevenage, showed a rockery planted with Morisia hypogaea, Gentiana acaulis, Æthionema iberideum, Viola gracilis, Saxifraga burseriana, and other subjects in bloom, with several excellent dwarf Conifers, including choice plants of the pigmy form of Abies excelsa named Remontii.

Messrs. G. & A. CLARK, LTD., Dover, showed coloured Primroses, Cyclamen Coum, Anemone fulgens, Gentiana acaulis, Hellebores, Crocuses, and other early-flowering hardy plants.

Messrs. R. GILL & SONS, Falmouth, showed varieties of Rhododendrons, fruiting sprays of Cornus capitata (syn. Benthamia fragifera), and Primula Winteri. The finest Rhododendrons were R. argentea and the dark-red variety Cornubia. (Silver Banksian Medal.)

Mr. G. REUTHE, Keston, Kent, was awarded a Silver Banksian Medal for hardy plants and shrubs. Amongst plants in flower were Iris Danfordiæ, I. reticulata, I. purpurea, I. histrioides major, various Crocuses, Anemone blanda, Leucojum carpaticum, Galanthus Ikaræ, Hepaticas, Berberis Bealii, and the rare Rhododendron parviflorum. (Silver Banksian Medal.)

Exhibits of Alpine and hardy plants were also shown by Messrs. T. S. WARE, LTD., Feltham; Messrs. JOHN PEED & SON, West Norwood; and the Misses HOPKINS, Mere Gardens, Shepperton.

Mr. C. P. RAFFILL, The Gables, Kew Green, exhibited nearly 400 photographs of plants growing in the Royal Botanic Gardens, Kew. There were numerous rare and choice Orchids, several Cycads only seen in botanic gardens, a large assortment of trees and shrubs, and general views in the gardens. The photographs were remarkably clear and distinct. (Silver-gilt Flora Medal.)

Messrs. E. WESTMACOTT & Co., 368, Strand, London, showed Natal Wattle Bark (Acacia pycnantha), for tanning; samples of Berry wax, which is used as beeswax, and is obtained by boiling the berried sprays of the bush Myrica fragifera; Soya Beans; varieties of Sugar Beans; South African Cotton (vars. of Gossypium herbaceum); Calabash pipes; Transvaal Tobacco; and flowers of Ornithogalum lacteum (Chinkerinchees), cut in South Africa on December 6

AWARD OF MERIT.

Lindenbergia grandiflora (see figs. 17 and 18, also p. 27).—A sub-shrubby species with clear, bright-yellow, musk-like flowers, of which the expanded coralla is about 1 in. in diameter. The specimen shown was about 3 feet high, branching and flowering freely in the upper half from woody stems, and we understand that the same specimen has been in flower for three months. There seems to be some doubt as to when the plant was first introduced, but it was a favourite subject for decorating the Opera House in Geneva some 30 or more years ago. The species is figured in *Bot. Mag.* (tab. 7,738), but the plant exhibited lacked the bright red spots which are conspicuous on the corolla lobes in the figure. Shown by Messrs. J. VEITCH & SONS, LTD.

Orchid Committee.

Present: J. Gurney Fowler, Esq. (in the Chair); and Messrs. Jas. O'Brien (hon. sec.), W. H. White, W. Bolton, Gurney Wilson, J. Wilson Potter, R. A. Rolfe, F. M. Ogilvie, G. F. Moore, F. J. Hanbury, W. Cobb, J. Charlesworth, J. Cypher, W. H. Hatcher, J. E. Shill, H. G. Alexander, A. Dye, R. Brooman-White, C. J. Lucas, C. Cookson, de B Crawshay, W. P. Bound, A. McBean, T. Armstrong, C. H. Curtis, and Sir Harry J. Veitch.

There was a great display of Orchids, a dozen groups being staged. Cypripediums, the chief plants of the season, predominated, the most remarkable group being that staged by G. F. MOORE, Esq., Chardwar, Bourton-on-the-Water (gr. Mr. Page), which occupied the whole of the end staging of the hall. Some 250 good specimens were included in the group, fine forms of C. insigne, C. Leeanum, and C. Euryades being numerous. C. Bridgei, C. Thompsonii, C. Curtmannii, C. Germaine Opoix, C. A. J. Balfour, forms of C. Actæus and hybrids of C. Fairrieanum were remarkably good and interesting. The group was awarded the Society's Gold Medal.

A Silver-gilt Flora Medal was awarded to Baron BRUNO SCHRÖDER, The Dell, Englefield Green (gr. Mr. J. E. Shill), for a remarkable group of splendidly-grown varieties of Lælia anceps. The plants were finely flowered, the pure-white L. anceps alba having 13 spikes, the very handsome L. a. Schröderæ, L. a. Dorothy (a very large flower), L. a. Morada, L. a. grandiflora, L. a. Sanderiana, L. a. Crawshayana, L. a. Amesiana, and others being equally well represented. The unique plant of Odontoglossum Pescatorei Sanderæ was also shown. (See Awards.)

Messrs. CHARLESWORTH & Co., Haywards Heath, were awarded a Silver-gilt Flora Medal for a very effective and interesting group, in which were many rare plants. The centre was composed of Lælio-Cattleya Golden Oriole and other yellow and crimson hybrids; whilst at the front of the group were the pretty yellow Oncidium cheirophorum, and the white Masdevallia tovarensis. Brilliant colour was afforded by a fine series of Odontiodas and some very richly-coloured Odontoglossums were also included.

H. S. GOODSON, Esq., Fairlawn, Putney, was awarded a Silver Flora Medal for a good group of well-grown Orchids. At the back of the group were some excellent varieties of Odontoglossum crispum and hybrid Odontoglossums, including O. ardentissimum Ernestii, the handsome O. crispum Mrs. Goodson, and some hybrids of O. Rossii. A good selection of Odontiodas gave bright colour, and several good Lælio-Cattleyas and Sophro-Cattleyas were noted.

Messrs. JAS. VEITCH & SONS, Chelsea, were awarded a Silver Banksian Medal for a group, in which were a pretty selection of hybrids of the Cypripedium Countess of Carnarvon class; also C. Idina, which secured an Award of Merit at the last meeting, and a new and fine form of it named Portia, which had a very broad and well-marked dorsal sepal. C. Actæus langleyense, C. vill-Exul, Miltonia Warscewiczii, Cattleya Ianthe, some good Lælio-Cattleyas, and a very pretty and interesting hybrid between Diacrium bicornutum and Lælia purpurata, and having pretty flowers with some resemblance to those of Lælia anceps, were interesting.

Messrs. SANDER & SONS, St. Albans, were awarded a Silver Banksian Medal for a good

group, in which were two beautiful forms of Lælio-Cattleya Walter Gott, the yellow L.-C. Pauline, and various unnamed hybrid Lælio-Cattleyas; Cypripedium Atlas, C. Minos Youngii, C. Troilus Sanderæ, the superb Miltonia Bleuana gloriosa, some very showy Odontoglossums and Odontiodas, and, among species, the very remarkable Cycnoches Cooperi, a showy variety with purplish, unblotched flowers, and ivory-white arms to the middle of the lip.

E. H. DAVIDSON, Esq., Orchid Dene, Twyford, was awarded a Silver Banksian Medal for a neat group of rare Orchids, the most prominent plant in which was the new, brilliant, vermilion-scarlet Habenaria Roebelenii (see Awards). Fine forms of Odontoglossum eximium, O. crispum, hybrid of beautiful shape and intense purple blotching, good Odontioda Bradshawiæ, and O. keighleyensis, and a noble plant of Oncidium crispum with nine branches to the spike were also noted.

Messrs. STUART LOW & Co., Enfield, were awarded a Silver Banksian Medal for a group, the centre of which was of Phalænopsis Schilleriana and P. Rimestadiana. With these were plants of Vanda cœrulea, that named albo-violacea being very remarkable, white with violet lip. Good specimens of Dendrobium Wardianum, Ansellia africana, Cattleyas and Lælio-Cattleyas, Angræcum eburneum and Oncidium splendidum were included.

H. T. PITT, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), secured a Silver Banksian Medal for a group containing a representative collection of Cypripediums of good quality, several Odontoglossum Thompsonianum, O. loochristiense, O. crispum and various hybrids, Cirrhopetalum appendiculatum, the rare Miltonia Endresii, Epidendrum Endreso-Wallisii and varieties of Lælia anceps.

Messrs. J. CYPHER & SONS, Cheltenham, were awarded a Silver Banksian Medal for a fine group, principally Cypripediums, the forms of C. insigne and C. Leeanum being very numerous and good. The centre of the group was of coloured Calanthes and the pure-white C. Harrisii, varieties of Lælia anceps, &c. Masdevallias were represented by M. Chamberlainianum, M. Schröderianum, M. tovarensis, M. Bocking Hybrid, and M. triangularis.

Messrs. J. & A. MCBEAN, Cooksbridge, staged a neat group, for which a Silver Banksian Medal was awarded. The bulk of the group was composed of fine forms of Odontoglossum crispum, together with some blotched hybrids, varieties of Lælia anceps, the showy L. Gouldiana, Cymbidium insigne, C. Wiganianum, Odontioda Bradshawiæ and other Odontiodas, and white Lælia anceps.

J. S. Moss, Esq., Bishop's Waltham (gr. Mr. Kench), showed Odontoglossum Smithii "Moss variety," a lighter form than the original; the prettily-blotched O. crispum Kenchii, and some interesting seedlings, one of which was very close to O. crispum Graireanum.

Sir CHAS. HADDON, Berkhamsted, was awarded a Bronze Medal for a group of Cypripedium insigne.

The Lady WERNHER, Luton Hoo (gr. Mr. Metcalfe), showed several plants of the rose-purple Calanthe Vulcan.

F. J. HANBURY, Esq., Brockhurst, East Grinstead, sent Cypripedium Lady Carlisle (Troilus × Hera), a very large and handsome flower.

DE B. CRAWSHAY, Esq., Rosefield, Sevenoaks (gr. Mr. Stables), sent Odontoglossum Vulcan Crawshayanum, a fine flower, and O. rosefieldiense, both of which had before received Awards.

W. R. LEE, Esq., Plumpton Hall, Heywood, sent Cypripedium Lady Dillon (Mrs. W. Mostyn × nitens "Ball's variety"), a very showy and large flower.

The Hon. ROBERT JAMES, Richmond, Yorks., sent Cypripedium Lady Evelyn James (Leeanum var. × aureum), fine and of good shape.

Sir JEREMIAH COLMAN, Bart. (gr. Mr. Collier), sent a grand plant of Odontioda Bradshawiæ violacea, scarlet with a purple shade.

FRANCIS WELLESLEY, Esq., Westfield (gr. Mr. Hopkins), sent Cypripedium Memoria Mostynii, a pretty yellow and white flower, and C. Actæus "Westfield variety," which had previously secured an Award of Merit.

Lieut.-colonel Sir GEO. L. HOLFORD, K.C.V.O. (gr. Mr. H. G. Alexander), sent a grand plant of Cattleya Miranda "Holford's variety"; Cypripedium Ulysses (Vandyke × G. F. Moore), a very pretty flower; C. Corsair (Niobe × nitens), with the characteristic dorsal sepal of C. Niobe, and the handsome C. Rossettii.

Mr. RAFFILL, of the Royal Gardens, Kew, exhibited a very remarkable set of photographs of rare plants, principally Orchids.

AWARDS.

FIRST-CLASS CERTIFICATE.

Odontoglossum Pescatorei Sanderæ, from Baron BRUNO SCHRÖDER (gr. Mr. J. E. Shill).—A unique form previously awarded a First-class Certificate, but the award was withheld, as no picture was obtained. It was now confirmed. Flowers of fine shape, white with the inner parts of the segments spotted cinnamon-brown.

AWARDS OF MERIT.

Odontonia Firminii (Miltonia vexillaria × O. crispum), from M. FIRMIN LAMBEAU, Brussels.—A remarkable cross, well showing the features of both parents. Flowers white with a brownish-rose mask to the lip.

Habenaria, Roebelenii, from E. H. DAVIDSON, Esq., Orchid Dene, Twyford.—A brilliant new species from Annam in the way of H. militaris, but dwarfer in habit and with a broader labellum, which is deeply cleft at the sides and an inch broad. Bright vermilion-scarlet.

Lælia anceps Roeblingiana, from C. G. ROEBLING, Esq., Trenton, New Jersey, U.S.A.—A very singular and pretty form, with the petals distinctly veined with purple.

Cypripedium Amazon (Leeanum Corona × nitens), from F. M. OGILVIE, Esq. (gr. Mr. BALMFORTH).—A model flower with a very fine, round dorsal sepal, green at the base and white above, and massive lip and petals.

Cypripedium Iona (bellatulum × Fairrieanum), from his Grace the Duke of MARLBOROUGH (gr. Mr. Hunter).—Flowers cream-white beautifully veined with claret-purple, and very distinct.

Cypripedium Alcinida (Alcibiades × insigne Harefield Hall), from Messrs. CHARLESWORTH.—Dorsal sepal broad, white with an Apple-green base and some purple-spotted lines. Petals and lip broad and well formed.

Odontoglossum George Day (Rossii rubescens × crispum), from H. S. GOODSON, Esq. (gr. Mr. G. E. Day).—A pretty flower with lilac-coloured ground; the sepals and petals are spotted with claret colour. Front of the lip lilac-rose.

Cycnoches species (provisionally named Cooperi), from Messrs. SANDER & SONS.—A very remarkable Orchid from Peru, and, presumably, a new species, though allied to C. pentadactylon, from which, however, it differs much in colour. The fine racemes had large, sepia-brown flowers, unspotted, but with a darker veining. The arms of the labellum are ivory-white. Referred to Kew for name.

CERTIFICATES OF APPRECIATION.

Confirmed by the Scientific Committee to M. H. GRAIRE, Amiens, and Messrs. CHARLESWORTH, Haywards Heath, for Adioda St. Fuscien (Ada aurantiaca × Cochlioda Noezliana).—A very remarkable cross nearest to Ada aurantiaca, but with deep-scarlet flowers more openly displayed than in Ada.

Fruit and Vegetable Committee.

Present: Geo. Bunyard, Esq. (in the Chair); Messrs. Jos. Cheal, Geo. Woodward, Edwin Beckett, A. W. Metcalfe, W. E. Humphreys, A. R. Allan, J. Jaques, John Harrison, Owen Thomas, C. G. A. Nix, A. Bullock, G. Reynolds, J. Davis, and J. Vert.

Messrs. JAMES VEITCH & SONS, LTD., Chelsea, showed 105 varieties of Apples, for which a Gold Medal was awarded. The fruits were in splendid condition, and showed little deterioration after being kept for so long in the fruit room. The more striking varieties were (*dessert*) Washington, Cox's Orange Pippin, Ribston Pippin, Baxter's Pearmain and Adams's Pearmain; (*culinary*) Emperor Alexander, Alfriston, Gascoyne's Scarlet Seedling, Sandringham, Beauty of Stoke, Annie Elizabeth, Bismarck, Bramley's Seedling, and Newton Wonder. Of the lesser known sorts we may instance Cornish Aromatic (a splendid dessert Apple that keeps well), Lamb Abbey Pearmain (rather smaller and more conical than Cox's Orange Pippin, which it somewhat resembles: the flesh is hard and the fruits keep well until June), Hoary Morning (a fine late Apple, prettily striped with red, firm of flesh and a good keeper), Margil, Brabant Bellefleur (a dessert variety that will keep until May), Tyler's Kernel, Barnack Beauty, Calville des Femmes (a yellow Apple somewhat like a ripe Quince), and Melon Apple.

Messrs W. SEABROOK & SONS, The Nurseries, Chelmsford, exhibited many excellent Apples. Such varieties as Blenheim Pippin, Duchess's Favourite, Cox's Orange Pippin, Bismarck, and Worcester Pearmain were brilliantly coloured. (Silver Knightian Medal.)

Messrs. SUTTON & SONS, Reading, showed vegetables of superb quality, arranged to the best advantage. Early White Broccoli was excellent, the large curds being snow white. New Year's Savoys, A1 Kales, Brussels Sprouts, and Hearting Couve Cabbage were all of first-class quality; and, besides these, there were good samples of Chicory, Seakale, Celeriac, Kohl Rabi, Scarole or Batavian Endive and Mushrooms. (Silver Knightian Medal.)

Mrs. E. H. DENNISON, Little Gaddesden, Berkhamstead (gr. Mr. A. G. Gentle), exhibited 24 varieties of Carrots, both long and stump-roots sorts. The roots were good specimens, the finer being Red Elephant, for which a Cultural Commendation was awarded; there were Carter's Giant Orange, Intermediate, Scarlet Perfection, Long Surrey, Summer Favourite (stump-rooted), and Early Nantes. (Silver Banksian Medal.)

Mr. W. E. SANDS, Hillsborough, Co. Down, Ireland, staged 63 varieties of Potatos. The tubers were clean and shapely, not over large, but even in size. Notable varieties were Erin's Queen, Irish Hero (oval), Vitality, Leinster Wonder (round), International Gem (oval), The Colleen, and King George V. We were informed that these sorts are all of excellent table quality. (Silver Knightian Medal.)

PERPETUAL-FLOWERING CARNATION.

THE following British-raised varieties of Carnations were registered by the Perpetual-Flowering Carnation Society in 1912. The descriptions are as supplied us:

Variegated Gloriosa (sport), flesh-pink, with deeper-coloured flakes. *Salmon Enchantress* (sport), rich salmon-pink. *Mary Allwood* (seedling), cardinal pink, a new colour in Carnations. From Messrs. ALLWOOD BROS.

Carmen (seedling), purple. *Calypso* (seedling), white, pencilled heliotrope. *Arcturus* (seedling), scarlet. *Elegance* (sport), white, marked with pink. From Mr. H. BURNETT.

Queen Alexandra, a sport from Scarlet Glow, colour salmon-pink. From Mr. GEORGE CLARK.

Mrs A. F. Dutton (sport), varying shades of pink. From Mr. A. F. DUTTON.

Albion (seedling), rose-pink. *Lucy* (seedling), clear light pink. *May* (seedling), light pink with white stripes. *My Rose* (seedling), rose-pink. *Fanny* (seedling), light pink with red stripes. From Mr. C. ENGELMANN.

Cinderella (seedling), deep mauve, with broad red stripes, evenly distributed over the flower. From Messrs. GEORGE FAIRBAIRN & SONS.

Lady Meyer, soft pink. From Mr. E. GUILE.

Snowstorm, pure white. *Matador*, bright cerise. From Mr. WM. LAWRENSON.

Cinnabar (seedling), old rose terra-cotta. *Elsie Boyd*, mauve, old rose. *Satin Robe* (seedling), bright rose-pink. From Messrs. STUART LOW & Co.

The Primate (seedling), salmon-pink. From Mrs. THOMAS PAGE.

Nigella (seedling), pure white. *Violet Seely* (seedling), bright rose pink. From Mrs. SEELY.

Salmon Winsor (sport), deep salmon rose. From Mr. J. D. WEBSTER.

Lady Algy (sport from Brecon), salmon. *Salmon Enchantress* (sport), rich salmon-pink. From Messrs. W. WELLS & Co.

Mrs. Brodie Henderson (seedling), dull red cinnabar colour. *Violet Lord* (sport from May

Day), colour medium pink, with darker markings. *Hon. John Boscawen* (seedling), light pink. *Mikado Junior* (seedling), clear mauve. *Miss Hardcastle*, brilliant scarlet. From Messrs. YOUNG & Co.

CITY OF LONDON ROSE.

THE first annual exhibition of this new society will be held at the Cannon Street Hotel. The sum of £70 will be offered in prizes, in addition to several cups, including one from the *City Press*. Classes in the metropolitan section are open only to growers residing within certain specified distances of the Royal Exchange. The hon. secretary is Mr. A. E. Protheroe, 67 and 68, Cheapside.

THE WEATHER.

THE FOLLOWING SUMMARY RECORD of the weather throughout the British Islands, for the week ending January 4, is furnished from the Meteorological Office :—

GENERAL OBSERVATIONS.

The *weather*.—The general condition was very unsettled. Rain was experienced almost daily in Ireland and the south-west of England, and also in the North of Scotland, and on several days over the Kingdom as a whole. In some districts, however, fair intervals were commoner than during the few weeks preceding.

The *temperature* was above the average, the excess being 6° in England E. and the Midland Counties, and 5° in some other parts of Britain. In the South of Ireland the excess was no more than 1.4°, and in Ireland N. and the English Channel about 2.5°. The highest of the maxima occurred on irregular dates at many stations on December 31, and at many others on January 4, and ranged from 55° in England E. and the Midland Counties to 51° in England N.E. and Scotland W. The lowest of the minima, which were mostly recorded either on December 29 or January 2, ranged from 26° in the Midland Counties to 33° in England N.E., and to 35° in the English Channel. The lowest grass readings were 18° at Crathes, 20° at West Linton, Kew Observatory and Hampstead, and 22° at Manchester, Ranceby and Southend-on-Sea. The temperature of the soil was high for the time of year at a depth of 1 foot and also at 4 feet.

The *mean temperature of the sea*.—At most places on the north-eastern, northern and north-western coasts the water was colder than during the corresponding week of last year; elsewhere it was mostly a little warmer. The means for the week ranged from 51° at Seafield and 50° at Newquay and Scilly to 40° at Burnmouth.

The *rainfall* was more than the average in Scotland N. and W., the western districts of England, and also in the Midland Counties, but less elsewhere. On December 30 as much as 1.85 inch fell at Fort William, and 1.16 inch at Aspatria. On January 4 more than 1 inch was recorded over a large area in the south-west of England and South Wales.

The *bright sunshine* was below the normal generally, but exceeded it in England E. and S.E., and also in Ireland N. and the English Channel. The percentage of the possible duration ranged from 27 in England S.E. and 26 in the English Channel to 8 and 7 respectively in England N.W. and Scotland W. In England S.E. and the English Channel the mean daily duration was 2 1 hour; in Scotland N. and W. only 0·5 hour.

THE WEATHER IN WEST HERTS.

Week ending January 8, 1913.

The fifth warm week in succession.—Each of the past five weeks, that is to say, of the present winter so far as it has gone, has been exceptionally warm for the time of year. During the past week all the days were warm, and also, with one exception, all the nights. On the warmest night the exposed thermometer did not fall lower than 42°—an unusually high minimum reading for January. The ground is at the present time 4° warmer at 2 feet deep, and 5° warmer at 1 foot deep, than is seasonable. Rain fell on five days, and to the total depth of three-quarters of an inch. The only really wet day was the 4th inst., when from 6 a.m. on that day to 7 a.m. on the next day, or for 25 hours, rain was falling without intermission. During the week 3½ gallons of rainwater came through the bare soil percolation guage, and 8 gallons through that on which short grass is growing. The sun shone on an average for 53 minutes a day, which is 37 minutes a day short of the mean duration of bright sunshine for the same period in January. The winds were as a rule rather high, but in no hour did the mean velocity exceed 15 miles. In no hour was the direction of the wind any point between north and east, or north and west. The average amount of moisture in the air at 3 p.m. exceeded a seasonable quantity for that hour by one per cent. *E. M., Berkhamsted, January 8, 1913.*

CATALOGUES RECEIVED.

FOREIGN.

DESPREZ & THUILLIER FILS & Co., Orleans, France—Nursery Stock.

SLUIS & GROOT, Enkhuizen, Holland—Vegetable, Flower, and Agricultural Seeds.

THE JAPAN SEED AND PLANT CO., LTD., near Shinjuku, Tokyo, Japan.—Japanese Seeds.

FRIEDRICH KORNER, Quedlinburg, Germany—Seeds.

DAMMANN & Co., San Giovanni a Teduccio, near Naples, Italy—Nursery Stock.

W. ATLEE BURPEE & Co., North Fifth Street, York Avenue, Philadelphia.

WILHELM PFITZER, Militärstrasse, 74, Stuttgart, Germany

J. [illegible], Odense, Denmark—Seeds.

MARKETS.

COVENT GARDEN, January 8.

[We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general averages for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—EDS.]

Cut Flowers, &c.: Average Wholesale Prices.

	s.d.	s.d.
Arums (Richardias)	2 0	3 0
Azalea, per dozen bunches	4 -0	5 0
Bouvardia, per dz. bunches	6 0	7 0
— white and coloured	6 0	-8 0
Camellias, white, per dozen	1 6	2 0
Carnations, per dozen blooms, best American varieties	1 9	2 6
— smaller, per doz. bunches	15 0	18 0
— Carola (crimson), extra large	4 0	5 0
— Malmaison, p. doz. blooms:		
— — pink	12 0	15 0
Chrysanthemums, per dozen:		
— white	2 0	4 0
— pink	2 0	4 0
— yellow	1 6	3 0
— bronze	2 0	4 0
— white, per doz. bunches	12 0	18 0
— coloured	12 0	18 0
Daffodils, per doz. bunches	7 0	8 0
Eucharis, per dozen	2 6	3 0
Freesia, white, per doz. bunches	2 6	3 0
Gardenias, per box of 15 and 18 blooms	5 0	7 0
Gerbera Hybrid, p. doz.	2 6	—
Hyacinth Roman, per dz. bnchs.	15 0	18 0
Lilium auratum, per bunch	2 0	2 6
— longiflorum, per doz., long	2 6	3 0
— — short	2 0	2 6
Lilium lancifolium		
— alba, long	2 0	2 6
— short	1 6	2 0
— speciosum rubrum, per dozen:		
— long	2 0	2 6
— short	1 0	1 3
Lily of the Valley, per dozen bunches:		
— extra special	12 0	18 0
— special	10 0	12 0
— ordinary	8 0	9 0
Mignonette, per doz. bunches	3 0	4 0
Orchids, Cattleya, per doz.	15 0	—
— Cypripedium	2 0	3 0
— Odontoglossum crispum	4 0	5 0
Pelargoniums, p. dz. bunches	4 0	5 0
— Double Scarlet	9 0	10 0
Poinsettias, per dozen blooms	9 0	10 0
Roses, 12 blooms:		
— Liberty	5 0	8 0
— Madame A. Chatenay	5 0	8 0
— Niphetos	2 0	2 6
— Richmond	5 0	6 0
Spiræa (Astilbe) japonica, per dz. bunches	6 0	8 0
Tuberose, p. doz. blooms, long	1 0	1 3
— — short	0 8	0 9
Tulips, per dozen bunches:		
— red	8 0	9 0
— white	9 0	10 0
— yellow	8 0	9 0
— bronze	9 0	10 0
— pink	10 0	18 0
Violets, Princess of Wales, per dozen bunches	2 0	3 0

Guernsey Flowers: Average Wholesale Prices.

	s.d.	s.d.
Narcissus:		
— Soleil d'Or	3 0	4 0
— Grand Primo	2 0	2 6
— Princeps	3 0	4 0
Narcissus:		
— Henry Irving	4 0	5 0
— Gloriosa	2 6	3 0

French Flowers: Average Wholesale Prices.

	s.d.	s.d.
Anemone, double pink, per doz.	2 6	3 0
Lilac, white, per bunch	3 6	4 0
— mauve	4 0	6 0
Marguerite, yellow, per doz. bnchs	2 6	3 0
Mimosa, pr. bunch	0 9	1 0
Narcissus, Paper White, pr. pad, 48 bunches	7 0	9 0
— Soleil d'Or, p.dz.	2 0	3 6
Ranunculus, per doz. bunches:		
— double scarlet	8 0	12 0
— yellow	8 0	12 0
— bronze	10 0	12 0
— carmine	5 0	6 0
Roses, Safrano, pkts. of 24 blms.	3 6	—
Violets, per pad of 48 and 60 bchs.	4 0	5 0
— Parma, large bunches, each	4 6	5 0

Cut Foliage, &c.: Average Wholesale Prices.

	s.d.	s.d.
Adiantum Fern (Maidenhair), best, per doz. bunches	6 0	7 0
Agrostis (Fairy Grass), per dz. bunches	2 0	4 0
Asparagus plumosus, long trails, pr. ½ doz.	1 6	2 0
— medium, doz. bunches	12 0	18 0
— Sprengeri	10 0	12 0
Berberis, natural, per doz. bnchs	3 0	4 0
Carnation foliage, doz. bunches	3 0	—
Croton foliage, various, dz. bchs.	12 0	15 0
Cycas leaves, artificial, per doz.	3 0	12 0
Eulalia japonica, per bunch	1 0	1 6
Moss, gross bnchs.	6 0	—
Myrtle, dz. bchs. (English), small-leaved	6 0	—
— French	1 0	—
Smilax, per bunch of 6 trails	1 0	1 3

Plants in Pots, &c.: Average Wholesale Prices.

	s.d.	s.d.
Azalea, white and coloured, per dozen pots	30 0	36 0
Aralia Sieboldii, dz.	6 0	7 0
Araucaria excelsa, per dozen	18 0	21 0
Asparagus plumosus nanus, per dozen	10 0	12 0
— Sprengeri	8 0	9 0
Aspidistra, p. dz., green	21 0	30 0
— variegated	30 0	60 0
Begonia Gloire de Lorraine, 48's, per dozen	9 0	12 0
Chrysanthemums, 48's	10 0	15 0
Cinerarias, p. doz.	9 0	10 0
Cocos Weddeliana, per dozen:		
— 60's	6 0	12 0
— larger, each	2 6	10 6
Croton, per dozen	18 0	30 0
Cyclamens, 48's	10 0	12 0
Cyperus alternifolius, p. dz.	5 0	6 0
— laxus, per doz.	4 0	5 0
Dracæna, green, per dozen	10 0	12 0
Erica hyemalis	12 0	15 0
— nivalis	12 0	18 0
— — 60's	6 0	8 0
— — 72's	3 0	4 0
— gracilis, 48's	12 0	15 0
— — in thumbs	3 6	4 0
— — 60's	6 0	8 0
Ferns, in thumbs, per 100	8 0	12 0
— in small and large 60's	12 0	20 0
— in 48's, per doz.	6 0	—
— choicer sorts, per doz.	8 0	12 0
— in 32's, per dozen	10 0	18 0
Ficus elastica, per dozen	9 0	12 0
Genistas, per doz.	12 0	—
Geonoma gracilis, 60's, per dozen	6 0	8 0
— larger, each	2 6	7 6
Hyacinths, white, in pots, per dozen	12 0	15 0
Kentia Belmoreana, per dozen	5 0	42 0
— Fosteriana, 60's, per dozen	4 0	6 0
— — larger, per dozen	18 0	63 0
Latania borbonica, per dozen	12 0	30 0
Lilium lancifolium rubrum in pts., per dozen	18 0	21 0
Lilium lancifolium alba, in pots., dozen	18 0	21 0
— longiflorum, per dozen	18 0	30 0
Lily of the Valley	18 0	21 0
Marguerites, in 48's, per doz., white	8 0	10 0
Pandanus Veitchii, per dozen	36 0	48 0
Pelargonium (Geranium), double scarlet, 48's	4 0	5 0
— other varieties	5 0	6 0
Phœnix rupicola, each	2 6	21 0
Poinsettias, per dozen pots, 48's	10 0	12 0
— 60's	6 0	—
Solanum, 48's, per dozen	8 0	12 0
Spiræa japonica, per dozen pots	6 0	8 0
— pink	10 0	12 0
Tulips, per box of 24's :		
— white	2 6	3 0
— pink	2 6	3 0
— scarlet (Tulips or Bulbs)	2 6	3 0

Fruit: Average Wholesale Prices.

	s.d.	s.d.
Apples :		
— Dessert, English, ¼ bushel	2 0	4 0
— Cox's Orange, ½ bushel	6 0	10 0
— Cooking, per bushel	2 0	4 0
— Wenatchee, p. case	7 0	9 0
— American, brls.	27 0	30 0
— Californian Newtowns, case	7 0	8 0
— Nova Scotian, per barrel	13 0	16 0
— Oregon, Newtown Pipp., cs.	8 0	10 0
Apricots, Cape, per case	4 0	6 0
Bananas, bunch :		
— Doubles	10 0	12 0
— No. 1	7 0	8 0
— Extra	8 6	10 0
— Giant	12 0	14 0
— Loose, p. doz.	0 6	1 0
— Red coloured	4 6	5 6
— Jamaica, per ton	£9	£12
— Jamaica Ordinary, per box (9 doz.)	4 0	5 6
Dates, per dozen	2 9	3 0
— Egyptian, cwt.	25 0	—
Cranberries, p. case	9 0	14 0
Grape Fruit, case :		
— 96's	8 0	18 0
— 80's		
— 64's		
— 54's		
— per dozen	4 0	6 0
Grapes (English), per lb. :		
— Canon Hall	6 0	10 0
— Muscat of Alexandria	6 0	10 0
— Black Alicante	0 6	1 6
— Almeria, barrel	12 0	18 0
— Gros Colman	0 8	2 6
Grapes, Lisbon, case	7 0	8 6
Lemons, per case :		
— Malaga	16 0	—
— Messina, per case	8 6	24 0
Nuts, Almonds, per bag	52 6	—
— Brazils, cwt.	54 0	62 0
— Spanish, per sack	40 0	42 0
— Barcelona, per bag	35 6	36 6
— Cocoanuts, 100	18 0	23 0
— English Cobs per lb.	0 3	0 4
— Chestnuts, bg.	14 0	26 0
— Walnuts French, per cwt.	30 0	—
— Naples, p. cwt.	64 0	—
Lychees, 1lb. box	1 6	—
Oranges :		
— Jaffa, per case	6 6	7 6
— Jamaica, case	4 0	8 0
— Mandarines, p. box	0 8	5 6
— Florida Tangerines, p. case	14 0	16 0
— Denia, per case	11 0	22 0
— Californian. Seedless, case	10 0	12 0
Pears :		
— French, box	3 0	—
— — per crate	6 0	8 0
— French Doyenné du Comice per crate	5 6	6 6
— Dutch Catillac, ½ bushel	3 6	—
— American, per barrel	7 0	8 0
Pineapples, St. Michael	3 0	5 0
Rhubarb, dozen bundles	0 8	0 10

Vegetables : Average Wholesale Prices.

	s.d.	s.d.
Asparagus, Giant, per bundle	16 0	18 0
— Paris green	3 6	4 0
— Sprue, per bundle	0 8	—
Artichokes (Globe), per dozen	2 6	3 0
— French	5 0	—
— ground, ½ bus.	1 0	—
— Batavia, French, dozen	1 0	—
Beans :		
— French, p. pkt.	0 4	0 5
— Guernsey, lb.	2 0	—
— Madeira, per handle	4 0	—
Beetroot, p. bushel	2 6	—
Broccoli, bushel	1 0	—
— bags	1 6	—
Cabbages, p. tally	2 6	—
— boxes	1 0	2 0
— red, per dozen	1 0	—
Carrots (English), pr. doz. bun.	1 6	2 6
— unwashed. per bag	2 6	—
— washed, bag	3 0	—
Cauliflowers per tally	7 0	10 0
— boxes	2 8	4 6
— Cornish, crate	3 0	4 0
— Italian, crate	2 9	—
Celeriac, per doz.	1 0	1 6
— French, p. doz.	2 6	—
Celery, per dozen "fans"	12 0	18 0
— unwashed	7 0	9 0
Chicory, per lb.	0 8½	—
Cucumbers, p. flat	7 0	9 0
Endive, per dozen	1 6	2 0
— French p. doz.	2 6	—
Greens, per bushel bags	1 0	—
Herbs (sweet), pkt. per gross	10 0	—
Horseradish, 12 bundles	12 0	—
Leeks, per doz.	1 6	2 0
Lettuce, French, per crate	3 6	—
— per dozen	1 6	—
Mint, per dozen bunches	3 0	—
Mushrooms, cultivated, per lb.	0 10	1 0
— broilers	0 6	0 8
Mustard and Cress per doz. punnets	0 4	0 6
Onions (English) per bag	3 6	—
— per bushel	2 0	—
— picklers, per bag	4 0	—
— (spring), per doz bunches	3 0	—
— (Spanish). case	4 6	5 6
— Dutch, bags	2 6	—
Peas, French, pad of 10 lb.	5 0	—
— Guernsey, per lb.	1 0	2 0
Parsley, per doz. bunches	2 0	—
Parsnips, per bag	3 0	
— per bushel	1 6	
Radishes (English) per dozen	1 0	1 6
Sage, per dozen	2 0	
Savoys, per. tally	4 0	
— per box	2 0	
Seakale, punnets	1 0	1 6
Spinach, p. bushel	2 0	
Sprouts, ½ bushel	1 0	1 3
— bags	1 6	2 0
Scotch Kale, bush.	1 6	

Vegetables: Average Wholesale Prices *(Contd.)*.

	s.d. s.d.		s.d. s.d.
Tomatos, Canary, per bundle ...	8 0–14 0	Turnips, unwashed, bag ...	2 6 —
Thyme, dz. bnchs.	2 0 —	Turnip tops, bushel	1 0– 1 6
Turnips (English), per dz. bunches	1 3– 2 6	— per bag ...	2 6 —
— per bag	2 6 —	Watercress, p. dz. bunches ...	0 4– 0 6

REMARKS.—There is still a good supply of English Apples, including Bramley's Seedling, Dumelow's Seedling (Wellington), Blenheim Pippin and Cox's Orange Pippin, but the last will soon be finished. Apples in boxes from overseas consist chiefly of beautifully-coloured, well-graded fruits of the variety Spitzenberg. There are also some of Oregon and Californian Newtown Pippins. Apples in barrels from Nova Scotia consist principally of Baldwin Ribston Pippin and Russet sorts. Pears are a limited supply; the varieties available are Winter Nelis, Easter Beurré, Glou Morceau and Keiffer (culinary). English Black Alicante and Gros Colman Grapes continue very plentiful. Belgian Gros Colman is a good supply. Only selected bunches of Muscats appear to be in demand. Cape Colony fruit made its first appearance last week, consisting of Apricots; this week included some fine Peaches in boxes of 28 fruits, realising as high as from 40s. to 56s. per box. Teneriffe Tomatos are now a plentiful supply, and are the only ones obtainable. French-grown vegetables, consisting of Asparagus, Peas, Dwarf Beans and Salads, are all available in fairly large quantities. Dwarf Beans are also arriving from the Channel Islands and Madeira. Mushrooms have been a better trade during this week. Large quantities of forced Rhubarb reach the market daily. Ordinary vegetables of all kinds are much in excess of the demand. *E. H. R., Covent Garden, January 8, 1913.*

Potatos.

	per cwt. s.d. s.d.		per bag. s.d. s.d.
Bedfords	4 0– 4 6	Dutch	2 9– 3 9
Kents	4 3– 5 0	Belgian	3 3– 4 0
Blacklands ...	3 6– 3 9	German	3 9– 4 9
Evergoods	3 6– 3 9	Dunbars	5 9– 6 3
King Edward ...	4 0– 5 0	Scotch (grey soil)	4 0– 4 9

REMARKS.—Trade shows a slight improvement, but prices remain about the same, although they are slightly firmer on the Continent. Stocks of foreign Potatos are still large, but English consignments are much fewer. *Edward J. Newborn, Covent Garden and St. Pancras, January 8, 1913.*

GARDENING APPOINTMENTS.

Mr. GEORGE JORDAN, for 18 years with the late Sir JAMES BAILEY, at Shortgrove and at Loft's Hall, Saffron Walden, as Gardener to Lord BRAYBROOK, Audley End. Mr. JORDAN was for many years in the service of the Rev. BUNERS, and was lecturer on Horticulture to the Suffolk County Council.

Mr. WM. JACKSON, as Gardener to E. HESKETH, Esq., Beachcroft, Eltham, Kent.

Mr. A. FALCONER, for nearly 3 years General Outside Foreman at Ford Manor, Lingfield, Surrey, as Gardener to J. JOICEY, Esq., Poulton Priory, Fairford, Gloucestershire.

Mr. HUGH BRENNAND, for the past three years Foreman at Gaddesby Hall, Leicester, as Gardener to the Hon. Mrs. DALE, Tingrith Rectory, Woburn.

Mr. F. LORD, Foreman at Davenham Gardens, Malvern, and previously at Chevening Park, as Gardener at Studley Horticultural College, Studley, Worcestershire.

Answers to Correspondents.

ARUM LEAVES: *F. G. B. Dolgelly.* The cause of the disease cannot be determined from leaves alone. Send a portion of the root-stock.

BOOK: *J. H. Heraman.* The first edition of Loudon's *Encyclopædia of Gardening* was published in 1822, and a second in 1824, of which there were several reprints till 1830, but in 1831 the work was re-written and much-enlarged editions were published. Mrs. Loudon relates that the book had "an extraordinary sale." Consequently, notwithstanding its value as a conspectus of the horticultural world of the period, a copy of any of the editions is not worth more than a few shillings.

BRASSICA AND CELERY LEAVES: *E. C.* The Cabbages are affected with Gleosporium concentricum. Destroy all diseased plants, and treat the soil with quicklime. The fungus only attacks plants of the Cabbage family, and you should plant other vegetables on the infected ground for some time to come. The fungus attacking the Celery is Cercospora Petroselini. Adopt the same measures as in the case of the Cabbages; the fungus only attacks Celery and Parsley.

CHRYSANTHEMUM DISEASED: *H. W.* The Chrysanthemums are affected with Chrysanthemum rust. Spray the plants at intervals when they are making their growth with a solution of potassium sulphide made by dissolving 1 ounce of potassium sulphide (liver of sulphur) in 1 quart of hot water, afterwards making this up by adding clear water to 2½ gallons. Any diseased foliage should be taken off and burned. Good results have been obtained by applying water containing a little paraffin.

CYCLAMEN LEAVES UNHEALTHY: *St. G. N. C.* There is no disease present on the leaves. The appearance suggests the presence of eelworm at the root.

EMPLOYER'S LIABILITY: *W. L.* You are entitled to compensation for the injury sustained, and unless your employer gives you notice you will be entitled to wages during your absence.

EREMURUS: *S. E. T.* The following particulars were given in *Gardeners' Chronicle*, January 27, 1912, in answer to a similar question to yours:—Eremuri should be planted not later than the end of January. Choose for them a sunny site, sheltered from strong winds, especially those from the east. Plant the roots 4 inches or 6 inches deep in well-stirred soil, and if the soil is of a heavy and close texture, apply a good dressing of old mortar rubble, both above and below the roots. If the staple is light and friable, lime will not be necessary. When the crowns appear through the soil, cover them with Spruce or Fir branches to protect them from severe frosts. This method of protection will preserve the plants from damage by strong winds. If the soil is of a light nature, it will not be necessary to lift the crowns every year, but in heavy, wet land lift the crowns when the foliage dies down, store them in a box of sand in a dry shed, and replant them in well-worked soil. December, if the soil is not too wet, is the best month to plant in your district, but it is better to plant a month later in wet, sticky soils. E. himalaicus, E. robustus, and E. Elwesianus are the best species to commence with, and as you gain knowledge of their requirements you might try E. Bungei, E. B. var. Shelford, and E. Olgæ. The three last-named should form a group apart from the others, it being quite unnecessary to lift these roots every year.

FOLIAGE PLANTS: *W. F., Walsall.* Palms suitable for the purpose are Rhapis flabelliformis, R. humilis, Chamædorea elegantissima, C. graminifolia, Chamærops humilis and Dæmonorops fissus. Codiæums (Crotons), Andreanus, Baroness James de Rothschild, Emperor Alexander III, Newmannii, B. Comte and Mrs. Iceton will be suitable for your purposes, also Dracænas Baptistii, Victoria, amabilis, ferrea, John Luther and Cooperi or pendula.

GARDEN COMPETITIONS: *D. T.* Your best plan is to obtain a copy of the *R.H.S. Rules for Judging*, and draw up a set of conditions accordingly. Therein you will find the value in points of the different subjects you mention. The book may be obtained through our publishing department, price 1s. 6d.

GARDENING EMPLOYMENT IN FRANCE: *F. G.* There are three important centres for general nursery work out-of-doors in France: (1) The Vitry and Chatenay district near Paris; (2) Orleans; (3) Angers. In several other towns nursery work or pépiniere is carried on systematically and well. Nursery work under glass is done principally around Paris and also at Tours. By making application in good time accompanied with a recommendation a gardener can usually secure a situation. The wages vary according to the locality. You must remember that in France, and most other parts of the Continent there is no half-day holiday on Saturday. If you apply to Mr. Schneider, President of the French Horticultural Society of London, 3, Meredyth Road, Barnes, London, sending him full particulars respecting your age, your experience, and the names of the places where you have worked, stating how long you intend staying in France and also what kind of work you prefer, he will endeavour to assist you further.

LAWN SANDS: *P. McL.* These are proprietary manures, and their composition is known only to the makers, though most of them contain large quantities of nitrogen. If you mix some nitrogenous manure with fine soil, and dress the lawn with this it will give the same results. A little basic slag might also be added with advantage.

MILDEW ON VINES: *G. H.* Drench the vines thoroughly whilst they are at rest with a solution of 1 lb. of copper sulphate in 30 gallons of water.

NAMES OF FRUITS: *Constant Reader.* 1, Seaton House; 2, King's Acre Pippin.—*Tower Lodge.* Belle Grideline.

NAMES OF PLANTS: *J. D.* Euphorbia Lathyris, Caper Spurge.—*Stoke House.* 3, Ionopsidium acaule.—*E. M.* Cymbidium giganteum.—*J. R. F.* 1, Abies lasiocarpa; 2, A. Nordmanniana; 3, Picea pungens; 4, Cupressus pisifera filifera aurea; 5, Thuya occidentalis aurea; 6, Pinus excelsa.—*J. F., Anxious.* 1, Pernettya mucronata; 2, Erica lusitanica; 3, Leycesteria formosa.—*M. C.* Moschosma riparium the Natural Order of Labiatæ.

ORCHIDS SEEDING: *H. E., Nantwich.* Cattleyas, Lælias and most other epiphytal Orchids mature their fruits better if the plants are suspended. They should be watered carefully, but, as the seed capsules attain their full size, less water should be afforded the roots, and as the pods approach the bursting stage a shred of raffia or thin indiarubber band placed round them will prevent the seed from becoming scattered, or an envelope of thin tissue paper may be fastened round the fruit when thoroughly ripe. Cut the capsule and store in a dry place, sowing a portion of the seed now and the remainder later.

PEAR BEURRÉ GREY: *H. B.* This variety is recorded in Barron's *British Pears*; the Official Report of the Committee of the National Pear Conference, held in the Royal Horticultural Society's Gardens, Chiswick, October, 1885. Fruits were sent to the conference by Messrs. Paul & Son, Cheshunt, and Messrs. J. R. Pearson & Sons, Lowdham, Nottinghamshire.

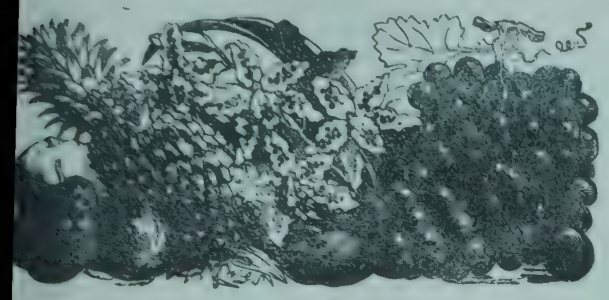
PERPETUAL-FLOWERING CARNATIONS: *C. M.* It is difficult to determine the cause of failure in your perpetual-flowering Carnations without seeing the plants or knowing the varieties. A shady greenhouse is not the best place to grow them in during the winter season, plenty of light being essential to the proper development of the flowers. The plants should produce fine flowers during December, January, and February in suitable conditions. The treatment you have afforded your plants is on the whole correct. Nitrate of soda is harmful to the plants, and should not be used. Do not employ pots of too large a size; 6½-inch pots are suitable, but for the stronger-growing varieties 8-inch pots may be employed. The soil should not contain too much manure or leaf-mould. Examine the roots to see if these are vigorous and active. You will probably find that they are not in the best condition, mainly owing to over-potting and feeding. If this is the case keep the soil moderately dry, and thus induce a healthy root action. Do not apply stimulants until the latter part of February. A night temperature of 45° to 50° is correct; in smoky districts excessive night temperatures should be avoided. Splitting of the calyx in the case of ordinary neat varieties is caused by irregular growth, due to fluctuations of temperature or light.

SHRUB FOR ASSOCIATING WITH RHODODENDRON SINENSE (AZALEA MOLLIS): *J. R. M.* Eucryphia pinnatifida, a beautiful shrub flowering in late autumn, would be suitable for your purpose.

VINES BLEEDING: *W. F.* The cause of bleeding in vines is late pruning or ill-ripened wood. If the vines are healthy, no great harm will result, as the bleeding is bound to cease sooner or later. Barron, in his *Vines and Vine Culture*, recommends covering the wounds with sealing wax or some styptic which may be obtained from any sundriesman. The warm, moist weather has probably been responsible for your vines bleeding to such an unusual extent. It is a good plan, in the case of outside borders, to cover the soil with spare lights or sheets of corrugated iron to ward off winter rains. If the vinery is started now, extra warmth may excite the vines into increased bleeding for a time.

VIOLET WELLSIANA DISEASED: *F. D.* The fungus Urocystis violæ is causing the injury. All diseased plants should be destroyed and the soil treated with quicklime. Violets should not be planted on the infected land for some time to come.

Communications Received.—J. B. L.—G. B., Stafford—S. A.—A. G.—W. C.—J. C.—W. B. H.—R. J. W.—F. C.—C. B. Sawbridgeworth—P. McL.—B. and P.—W. J. N.—W. R. C.—W. H.—Dr. W.—J. E.—G. K.—A. D. W.—W. C., Newport—W. F.—H. B.—H. E.—S. B.—L. and M.—J. Y., New York—A. R. W.—F. H.—W.—T. Y.—H. G.—G. M. T.—H. C. L.



THE
Gardeners' Chronicle
No. 1,360.—SATURDAY, January 18, 1913.

CONTENTS.

Acacia dealbata at Branksome Hall gardens ... 45
Alpine garden, a Swiss 42
Birkinshaw, Mr. T. W., presentation to... ... 41
Books, notices of—
Sweet Pea Annual, 1913 42
The Orchid World ... 36
Tulips 37
Year Books and Diaries, 1913 41
Bowling greens 33
Brazier, Mr. G., appointed secretary of the Shropshire Horticultural Society ... 41
Corsican Pine, the ... 45
Florists' flowers—
Perpetual-flowering Carnations 36
Foreign correspondence—
Half-holiday for gardeners 44
Iris caroliniana ... 44
Fruit-growing in Nova Scotia 41
Gardeners' Royal Benevolent Institution (Worcester Auxiliary) 41
Grape Madresfield Court 45
Jacobinia chrysostephana 39
Law notes—
Action against a horticultural society ... 47
Undeveloped land duty 46
Novelties of 1913 ... 43
Nursery notes—
S. Bide & Sons, Farnham 47
Obituary—
Geert, Auguste Van ... 48
Grolez, Jules 48
Theobald, William ... 48
Orchid notes and gleanings—
Brasso-Cattleya Orpheus 36
Lælia Gouldiana ... 36
Potatos, Rhodesian restriction on imported... 42
Rosary, the—
Notable crimson Roses 36
Scotland, notes from ... 45
Societies—
Glasgow Fruit Trade Benevolent 47
Horticultural Club ... 46
Manchester and North of England Orchid ... 46
Perpetual-flowering Carnation 46
Royal Caledonian Hort. 46
Royal Horticultural ... 41
(Scientific Committee) 46
Scottish Hort. ... 46
Species, elementary ... 42
Sweet Pea, the 40
Week's work, the—
Flower garden, the ... 39
Fruits under glass ... 38
Hardy fruit garden ... 39
Kitchen garden, the ... 38
Orchid houses, the ... 38
Plants under glass ... 39
Wilks, Rev. W. 34
Wood, ripened, in fruit trees 45

ILLUSTRATIONS.

Æthionema coridifolium in the Pont de Nant Alpine garden, Switzerland 42
Arenaria purpurascens in a Swiss Alpine garden ... 43
Pont de Nant Botanic Garden, Switzerland (Supplementary Illustration)
Sweet Pea, reproduction of the earliest illustration of a 40
Theobald, William, portrait of the late 48
Tulip on the frontispiece of "Le Floriste François" ... 37
Wilks, Rev. W., portrait of, 35; at work in his new garden 34

THE MAKING OF A BOWLING GREEN.

IN the course of the last 20 years or so the ancient and royal game of bowls has been, and still is, winning an ever increasing number of enthusiastic followers, so that poor must be the place which cannot claim to possess a first-rate bowling green. The public authorities have not been slow to fall into line by allotting spaces, properly laid out and carefully tended, in public parks and on open spaces. Private clubs are springing up everywhere, and their natural ambition is to possess a first-class green of their own. Many private individuals also make arrangements in their gardens, where space permits, to indulge in the pleasant pastime. Hence there is a considerable demand for skilled workmen able to undertake the formation of greens.

To the looker-on, innocent of the vagaries the bowls display when spinning along the turf, any good lawn would appear to be sufficient. This, however, is far beside the mark, for a green which would give satisfaction to even a mediocre player must be well laid. It must be perfectly level; bumps and dents, however small, would spoil it. The turf should be short and soft, of fine, even texture, and weeds cannot be tolerated. A good, yet porous foundation is necessary, so that the green will readily drain itself of any excessive moisture; indeed, it should during the summer be playable within an hour or so after even heavy showers. These conditions are absolutely essential.

A full-sized bowling green is 40 yards square. This gives six rinks of 20 feet each, and enables players to play across and transversely, allowing the ends at which most wear and tear occurs a rest, say, every alternate week, and so keep in good condition. If, however, space does not suffice for a green of a full size, a smaller, say three, two or only one rink green may be made. Each rink should be 20 feet in width and 40 yards long, but if only one rink is contemplated, it is advisable to allow 2 or 3 feet over at each side, especially if bowls of larger bias than three degrees are played with. (Bias, it may be said, is given to the bowl by a flattening of one side. Throughout the southern counties bowls of three degrees bias are usually played with, though one meets players who prefer so much as four and even five degrees.

Again, English greens, especially those in southern counties, are now almost always laid dead level; players in Scotland and in the North, as a rule, prefer the crown-green, which is raised in the centre—or, in the smaller ones, across the middle—to the extent of 6 inches. Be the green large or small, it should be bordered by a ditch covered by a grille, which latter should be sunk about 1 inch or so below the surface of the turf. This ditch again should be bordered by a bank, preferably turfed, to form a boundary of the whole green.

Good suitable turf cannot be obtained locally in some parts of the country, and has to be brought from long distances. Scotch turf, or that which grows near the sea, is as a rule preferred. If, however, the expense is to be kept down, and if time is not pressing, good turf may be raised by sowing suitable seed. It may be mentioned here that some people hold the opinion that it is impossible to obtain satisfaction from sowing; if, however, the seed is carefully chosen and the work properly done, there is no reason why thoroughly good greens should not be formed from seed; on the contrary, experience proves that this can be done.

The site chosen should be in a sheltered spot, or where shelter from wind may be obtained by judicious planting. In setting out the ground allow 40 yards square for the green itself, 1 foot all round for the ditch, and whatever space may be desired for the bank on which spectators would take up a position in order to watch the game. Much, of course, depends upon the surroundings; it may be that space does not permit of the top of the banks being extended, or even that they must be dispensed with all together. If a bank be made it should be at least 18 inches high and as steep as it can be made: in fact, all but vertical at its face, and turfed down to the grille.

Having selected the site and decided how far the banks should extend, we now set out a square 122 feet long at each side. If the ground is fairly level, it is as well to make the bank all round at a level corresponding to that of the green itself. If, however, the ground slopes considerably, which on clayey soil is rather an advantage, as a better drainage is then obtainable, it is well to let the banks on two sides slope downwards and dispense with it at the lower level altogether.

If the top soil is of fair quality, it may be set on any vacant adjoining ground for use; if not, it should be removed together with the subsoil to a depth of 2 feet below the estimated level of the green. After the bottom has been well cleaned out and roughly levelled, the top level for the height of the green, less turf, must be set in. This should be taken from corner to corner and across the middle, and stumps should be set at convenient distances, say, every 20 feet or thereabouts, to a height of 2 feet above the ground. In doing this leave a margin all round of 1 foot to form the ditch afterwards, and set the outside stumps by line, so that a good, straight boundary may be obtained. Be careful that the stumps throughout are set to the correct level according to the green it is desired to make, and make them secure so that they cannot be disturbed by subsequent operations. It depends greatly upon these stumps whether the green turns out well or otherwise when completed.

It is desirable that at this stage a good water supply be laid to the edges of the green, so that the water may reach to the middle without the hose being dragged all over every time that the green has to be watered; this is specially important if the green is being raised from seed.

The foundation should now be built up. Large, hand-picked clinkers, such as may be obtained at any large factory, railway or refuse destructor, are best for this purpose, though good coarse, hard core which will allow a very porous bottom to be made can be used. Whatever material is used should be placed so that it will make a firm but porous bottom, which cannot clog or sour for years to come. When the whole space has been covered to the depth of 18 inches a heavy roller should be used to settle it firmly, so that the surface cannot give way after the green has been finished.

When this bottom has been satisfactorily put in a layer of smaller clinker, say, such as would pass through a 1-inch sieve but not a ½-inch one, should be placed on it. This material should also be used to make good any hollows, and bring the total level up to 1 foot 7 inches. If this layer, when rolled, gives a good close surface sand may be put directly upon it. If, however, there are signs of the sand running away into the bottom layer, it is well to run in a thin layer of fibre or leaves or similar material which may be at hand. As the top soil which has been removed should be well sifted, there is generally a fair quantity of fibrous material left over which may be used for this purpose. Such a layer, of course, should be very thin, is being only required to keep the sand in place

The ditch should now be formed by boarding the whole green around along the outside stumps to the required height, that is, level with the top of the outside row of stumps.

The sand, of which the next layer consists, should now be brought on to a height of a further 2 inches. It must be clean and free from clay or other binding material, which would make this layer too solid when the surface soil has been rammed, and practically spoil the drainage which it is intended to supply. Any fine sand will do; sea sand, however, provides an ideal material, and may be readily obtained almost everywhere, as railway companies as a rule only charge freight for it to the nearest railway station. After the sand has been carefully spread and levelled all over it should, especially if dry, be worked firm by a copious supply of water applied through a good rose.

Soil passed through a 1-inch sieve has now to be laid upon this sand. It should be put to such thickness as will allow the whole to be firmly trodden and levelled flush with the stumps. The level and straight-edge must be tried over the whole surface, and every inequality, however small, should be rectified.

For levelling the sand or soil the back of an ordinary wooden rake may be used. A more useful tool, however, is easily constructed from a handle about 6 feet long, a strip of wood 5 feet long, 2 inches wide, and about ¾ in. thick. This latter should have a hole drilled in the middle and the handle inserted rake-like. If a nail is driven through the edge of the cross-piece and the handle and a couple of stays nailed from the handle to the cross-piece, the whole is of sufficient durability to pull a fair amount of soil along with it. The tool will be found very useful wherever surface levelling is required. *H. P. L.*

(To be concluded.)

MR. WILKS AND HIS NEW RESIDENCE.

WE may take it for granted that most of our readers will easily recognise in the hard-working planter illustrated on this page the portrait of the Rev. W. Wilks, the energetic secretary of the Royal Horticultural Society. Many, too, may also know that Mr. Wilks has found it necessary to resign his position as Vicar of Shirley, a post he has held for a very long time, although the reasons for his partial retirement may not be generally understood. The following particulars obtained from Mr. Wilks himself, on the occasion of a recent visit to his new and charming residence, explain the circumstances fully. We put them in his own words:—

"From my earliest recollection I have been imbued with the love of gardening. My grandfather and my father were both enthusiastic gardeners, and the Rev. Joshua Dix, chairman of the Floral Committee of the R.H.S., was an intimate friend of our family, and used to take me as quite a lad to the shows of the Society. I was also present at the opening of the Great Conservatory and the Gardens at South Kensington, and in the year 1865 or 1866 Mr. Dix got me elected a Fellow of the Society. I came to Croydon as curate of the Parish Church in 1866, was appointed Vicar of Shirley in 1879, and hon. secretary of the R.H.S. in February, 1888.

"In 1894, on the second Sunday after Easter, my voice suddenly stopped in the middle of a sermon. I was dumb! I could not even give out a hymn, so as to end the service. Next day I was taken up to London to see Sir Felix Semon, the throat specialist, and after careful examination he said he had no hesitation in pronouncing it to be cancer of the larynx. I then placed myself under the charge of the late Sir Henry Butlin, and from April to October I went up to see him regularly twice a week; he put electric wires down my throat and burnt the affected part. All these months I was absolutely dumb, and in October Sir Henry said I must come up to a nursing home in Wimpole Street, and he would open the larynx and take away the growth on the vocal chord. This was done, it being found necessary, when the larynx was opened, to remove the whole of one vocal chord. The wound healed splendidly, and in the course of six weeks I was able to return home to Shirley, and could just feebly and faintly whisper. For a further 18 months I could only whisper, but all the time my voice was getting stronger and stronger, and exactly two years after the breakdown I was able to preach again in my church at Shirley, and though I have, of course, only one vocal chord instead of other people's two, my voice, by diligent practice, has become stronger and stronger, although the effort to use it has always caused me considerable pain. In 1910 I found my throat giving me more and more discomfort with every exertion of voice, and it became evident to me that I could not much longer continue both my church and parochial work and my work for the R.H.S. I must give up one or the other of them, and my throat trouble seemed to me to indicate clearly which to abandon. So in the winter of 1910 I set about planning a new house at Shirley, adjoining my old vicarage; the building was begun in March, 1911, and finished in October, 1912, my resignation of the vicarage dating from October 6, 1912. I moved into



[Photograph by J. Russell & Sons.

FIG. 19.—THE R.H.S. SECRETARY AT WORK IN HIS NEW GARDEN.

my new house, 'The Wilderness,' on October 19th, 1912, my 69th birthday."

Mr. Wilks's new residence is situated just two miles from Croydon Railway Station, on the near side of the old vicarage. Every detail in its structure has been determined by himself, and in place of a "builder's" house he has one which specially suits the site and provides just those features personal inclinations have suggested. The ground forms a gently-rising slope from the road and house, and the appearance from the back is exactly that of a piece of semi-cultivated common, ending no one knows where, because the rising ground at length falls again and so terminates the view. The site is only 4½ acres, but looking from the house there are no obvious dividing lines or suggestions of restricted area. The land was ordinary meadow grass when purchased by Mr. Wilks, and he has planted cuttings and seeds of favourite trees and shrubs just how and where he pleased, the result being, as already stated, that the effect is that of a more or less cultivated common. A common, because the grass is dotted all over with shrubs and other plants, and cultivated, because in place of only the native gorse, what appears to be a random collection of plants is really a choice selection made by the gardener proprietor. As plants grow whilst their owners sleep, the progress they make is sometimes a matter of surprise, and looking at the finished appearance of the grass-covered mound to-day Mr. Wilks already feels a little proud that he has raised almost every specimen himself from a cutting or seed.

The site includes a small plantation at the side farthest from the vicarage with sufficient leafage to give shade, but not enough to exclude light. The ground is covered with Ivy, and amongst the Ivy Mr. Wilks planted here and there a hardy Cyclamen. The Cyclamens have not only succeeded in holding their own against the Ivy, but have grown beyond expectations, producing colonies of seedlings, in almost every instance the plants in late autumn appearing with bold foliage that has made its way through the Ivy without difficulty. This fact shows that these beautiful plants may be grown in greater shade than is generally supposed



REV. W. WILKS, M.A., IN HIS STUDY.

—perhaps in any position where the wood Anemone succeeds. From what has been said it will be seen that Mr. Wilks is engaged in a delightful scheme of wild gardening, which comes up to within a yard or so of the house. The grass, be it said, which in spring is hidden by the wealth of flowering bulbs, is mown once a year. At no season is the view from the house uninteresting, for the eye can never rest upon bare soil. There are several hardy flower borders, but so placed that they do not come into immediate view.

We had intended saying only a few words about Mr. Wilks's new garden, but there is an interesting circumstance that it is impossible for us to pass over without remark, namely, the fact that Mr Wilks will shortly complete his twenty-fifth year as secretary to the Royal Horticultural Society. The circumstance will serve to bring to the minds of some of the older Fellows the pathetic condition of the Society's affairs in 1887, when the South Kensington policy had brought it to a state of bankruptcy, destroyed its prestige, and invited contempt. There was little to justify the hopes that were still indulged in by the faithful few that the ship might be made to survive the storm and bad navigation she had experienced, but one hopeful factor there certainly was; for two years earlier Sir Trevor Lawrence had been elected the Society's President, an incident which has had a profound and salutary effect on its history. In the presence of dismal failure it was only natural that division should exist amongst the Fellows in regard to the future policy; indeed, there were three parties, (1) certain members who were content to go on as before, borrowing money from time to time as occasion demanded and circumstances permitted, with the certainty of drifting further and more hopelessly into debt and dependence; (2) others who were content to let the Society's existence come to an end, and (3) still others who could not contemplate the demise of the Society with any degree of satisfaction, but were even more averse from continuing the old and discredited policy. We need not mention many names, but amongst those who constituted the third group were the Rev. W. Wilks, Dr. (now Sir Daniel) Morris, Dr. Maxwell Masters, and others connected with the Horticultural Club, an organisation formed in 1875 to provide a social circle that might assist the R.H.S. in its necessitous circumstances. In February, 1888, two secretaries were elected on one day, first, Colonel Mason, at the general meeting of Fellows, and, later, the Rev. W. Wilks, by the Council at a meeting at which Colonel Mason tendered his resignation, the Council, of course, having the right to fill a vacancy occurring between two general meetings. Later Dr. Morris was appointed Treasurer, and with Sir Trevor Lawrence as President, the Society, with three excellent officers, soon began to put its house in order and arrange a policy which should consist solely in furthering the cause of horticulture.

We are not writing the Society's history, but merely relating a few circumstances of which we are reminded by Mr. Wilks's 25 years of service. What that service has done for the Society is known to the Fellows, but it may be mentioned that whilst in 1888 there were 1,100 Fellows, there are now nearly 13,500, and a long list of affiliated societies. From a state of bankruptcy the Society has progressed until at the present it has invested funds to the amount of £67,258. It possesses a home in the Vincent Square Hall of which every horticulturist is proud, and a garden at Wisley of great beauty and interest. Such is some of the work which has been accomplished by Mr. Wilks and his colleagues in the quarter of a century which comes to an end at the annual general meeting of Fellows to be held next month

THE ROSARY.

NOTABLE CRIMSON ROSES.

ROSES of this special colour—whose dimensions are of an impressive description—belong, for the most part, either to the class of Hybrid Perpetuals or to that of the more popular Hybrid Teas. It would tax the resources and the experience of an expert, in many instances, to distinguish the varieties of those classes from each other. It is difficult to understand why Margaret Dickson, which here grows and aspires like a Noisette, should be entitled a Hybrid Perpetual, while certain Roses of a similar complexion, with probably less reason, should be called Hybrid Teas. When my dark crimson-hued Irish namesake appeared, it was placed in the H.T. class by several distinguished rosarians, including its raisers; and in the H.P. class by others, whose opinion on such a subject as heredity could not be despised; the latter asserting that in foliage at least it was essentially a Hybrid Perpetual. Nevertheless I cannot doubt that one of its parents must have been a Hybrid Tea. Some of the older crimson Roses, which seem, like certain human beings, to have a gift akin to everlasting youth, still survive in our catalogues, and hold their own at our great exhibitions. Among these may be mentioned Beauty of Waltham, raised by that great rosarian and gifted horticultural writer, the late Wm. Paul; Duke of Edinburgh and Duke of Wellington, the velvety texture of which has always been much admired, are still assiduously cutivated in many gardens in preference to others similar in colour and of more recent origination, but not more attractive in aspect. These newcomers, moreover, are often of very moderate capability in the special directions of growth and floral productiveness; and their prices are prohibitive. One of the sweetest of the older Roses is Annie Wood, with which I was greatly charmed, when I came upon it incidentally, like an exquisite surprise, in the nurseries of Messrs. Thomas Smith and Co., at Stranraer in my county, not many years ago. There, also, some of the more modern dark crimsons, especially Commandant Felix Faure, are gloriously grown. The firm's exhibits of this variety, which has great artistic capabilities, have been immensely admired at many of the leading Scottish horticultural exhibitions. Charles Lefebvre is a venerable variety still largely cultivated, which, I may add, not seldom rewards the attentions of the cultivator with grandly effective flowers. Salamander is a Rose of extremely charming crimson-scarlet complexion; so also is the more recently raised Florence Haswell Veitch, which, though the blooms are not of abnormal size, are of the very finest texture, and profusely-produced. Leslie Holland, introduced last year, is also a very beautiful variety; though not, in my experience, a vigorous grower, it flowers with such freedom and splendid effectiveness that I do not hesitate to recommend it to my readers as a fine bedding variety. I greatly question, however, if it will ever entirely supersede Hugh Dickson or J. B. Clark, both of which have nobly stood the stern test of experience as Roses that can be supremely effective in almost all circumstances and under ungenial climatic conditions. Apart from their colour, which is fascinating, and their charming fragrance, they are among the grandest growers in our Rose gardens and the most floriferous. I have not yet had the privilege of seeing the variety King George V, the colour of which is described as "rich, blackish-crimson, with deep, velvety, violet flush"; but rosarians who have seen it at Belmont, near Belfast, have been greatly impressed by its attributes. Much is expected of that nobly-endowed, dark-crimson variety (a native of far-famed Newtownards), entitled George Dickson, a Rose of the greatest charm and most exquisite fragrance, which last year gained the Gold Medal of the National Rose Society, and has been supremely successful wherever it has been shown. Combining the colour of Hugh Dickson and Horace Vernet, it should be a great acquisition to rosarians. *David R. Williamson, Wigtownshire.*

ORCHID NOTES AND GLEANINGS.

BRASSO-CATTLEYA ORPHEUS.

A FINE flower of this pretty hybrid between Cattleya Trianæ and Brassavola glauca is sent us by J. J. Neale, Esq., Lynwood, Penarth (gr. Mr. H. Haddon), who states that the seeds were sown six years ago. It is a good, flatly-displayed flower, white, tinged with lavender colour.

The original form, between B. glauca and C. Trianæ alba, was shown by Messrs. Jas. Veitch & Sons at the Royal Horticultural Society's meeting held on January 14, 1902, when it received an Award of Merit, and was recorded in the *Gardeners' Chronicle*. The plant was then shown as Lælio-Cattleya, Brassavola glauca and B. Digbyana being then placed under Lælia by some authorities. Apart from the Orchids, it is interesting to learn that in the gardens at Lynwood of J. J. Neal, Esq., from which such an interesting collection of curious and insectivorous plants was sent to the great International Horticultural exhibition, seeds of the dwarf Australian Pitcher plant have been matured and the seedlings are coming along vigorously. Cephalotus follicularis from imported roots has the reputation of being difficult to grow, although at Lynwood it thrives well. Home-raised seedlings will probably grow much more freely than imported crowns.

LÆLIA GOULDIANA.

THE flowers of this beautiful Orchid are mauve-purple in colour, and appear at this season. The variety is the most showy and distinct of its section, but it never seems to have been appreciated in gardens as its merits deserve. There are probably several reasons for this. In the first place the true plant has never been plentiful. In estimating its place in the genus, Reichenbach, who originally described the plant in *Gardeners' Chronicle*, January 14, 1888, p. 41, from specimens flowered with the original importers, Messrs. Sander & Sons, while placing it near to L. autumnalis suggested that it might be a natural hybrid. Consequently after the original importation was distributed and until a recent importation the true plant has not been available, but L. autumnalis in its worst form has often been requisitioned to represent it. The fact is that the true L. Gouldiana is totally different from any others of its section. It forms a compact plant, the rather erect, bright green leaves, free growth, and very floriferous character rendering it easily recognisable. In Mrs. Bergheim's gardens, Belsize Court, Hampstead, Tracy's Nursery, Twickenham, and other gardens in the neighbourhood of London, it was the brightest Christmas flower, unblemished by the fogs which damaged the blooms of many other Orchids.

"THE ORCHID WORLD."

THE January issue of this monthly publication is specially interesting and varied, among other subjects being notes on Orchids at Palmerston North, New Zealand; on British Orchids, and on the Application of Genetics to Orchid Breeding. A coloured plate of Odontoglossum Harwoodii, "The Shrubbery variety," and illustrations of Rhyncostylis retusa alba, Cypripedium Viking, Cattleya Schröderæ and Dendrobium nobile virginale, with 220 flowers, in the Westonbirt collection, are also given.

FLORISTS' FLOWERS.

PERPETUAL-FLOWERING CARNATIONS.

MOST gardeners at the present time will be contemplating striking their batch of cuttings, and a few hints on the preparation and after-treatment may be acceptable. First secure a small hand-light, and place it in a house or frame having a moderate temperature. The cooler the conditions in which cuttings are rooted the better for their welfare. Fill the hand-light about half full of sawdust, then procure 3-inch pots, which must be clean and well crocked, filled with silver sand, which has been washed. When selecting the cuttings, great care should be exercised in removing them from the plants. Give a gentle, downward pull, and the cutting should come away with a small portion of bark from the flower stem. This should be trimmed off with a sharp knife. Should the cutting come away without any of the main stem, it can be taken that it is too soft, and will not root easily. When dibbing them in see that each cutting rests on the bottom of a hole. If this operation is not attended to with great care, the cutting hangs up in the hole, and very seldom strikes. Water them thoroughly with luke-warm water before plunging the pots in the sawdust in the hand-light. Every morning, open the light for about two hours to allow the surface moisture to evaporate, and wipe the glass with a sponge. No watering or sprinkling will be required during the three to five weeks that will elapse before roots are formed. Immediately this stage is reached admit air gradually till the young plants are inured to the general conditions of the house. When sufficiently rooted, take them out of the frame and place them in a temperature of 50°, close to the glass. The plants will require potting up singly in small 60's, using a compost consisting of 1 part loam and 2 parts half-decayed leaf-mould, and plenty of coarse silver sand to ensure its porosity, with a little soot added, first passing all these materials through a half-inch sieve. Before potting is commenced, the compost should be warmed to the same temperature as that in which the plants are growing. After potting is finished, place the plants again in the same temperature, and if possible put them on a stage that has a good layer of small shingle or ashes, as this will tend to keep the roots cool, and act as a deterrent to red spider, which, if once established, is harmful to Carnations. Shade the plants from bright sunshine until they have recovered from the check received through potting, exercising great care with the watering till the plants get established. Syringe every morning between the pots, and keep the temperature of the house about 50° to 55° during the day, with a night temperature of 45° to 50°. After a month or five weeks they will again want repotting, on this occasion into 5-inch pots, using a rougher compost, the loam to be broken up to the size of a Walnut. The ingredients should consist of 1 part loam, 2 parts leaf-mould, 1 part Mushroom-bed manure, a little bonemeal, soot and sufficient sand. Mix them well together, and pot the plants rather firmly. After this is finished, place the plants in a heated frame if possible, and near to the glass, on a bed of ashes. Keep the frame moderately close till the plants have started rooting into the new soil, when air should be given liberally on all suitable occasions to promote sturdy growth. The syringe must be used every morning between the pots and overhead to keep down red spider and green fly, and if weak soot water is used it will help the plants considerably.

As regards stopping by pinching the shoots, this should be done once in the small 60's about a fortnight before they are potted on, and again when in the larger pots. Do not stop all the shoots at once, but at intervals of 10 days from one stopping to another. When the

pots are filled with roots, they will require potting into the flowering-pots, 8 and 9-inch pots, according to the strength and variety of the plant. The soil should be much rougher; the loam should be broken up not any smaller than a hen's egg, using one part loam, two parts leaf-mould, one part manure from an old Mushroom bed, adding mortar rubble, soot, bonemeal, a small quantity of blood manure and sufficient sand or road grit to make the whole porous. The pots should be plunged in ashes in a frame. If the weather is mild the lights can be removed, but should heavy storms threaten the lights ought to be put on till the plants are well established; should hot, dry weather occur syringe the plants frequently with soot water. The staking should be carried out as the plants require it, using three stakes triangular fashion; this will admit about three growths to each stake. Some varieties, such as Mrs. H. Burnett and Britannia, will require four and five each. The housing of plants should be carried out not later than the second week in September, placing them on a bed of shingle or ashes and well exposed to the light. Should red spider present itself syringe the affected plants with "Spidacide." Green fly can be destroyed by fumigating with a nicotine vaporiser. Some of the best varieties are Carola, Jessica, Enchantress, Lady Alington, White Perfection, Beacon, Mrs. H. Burnett, Rose Dorée, Rose Pink Enchantress, and White Wonder. *G. Hart, Hockley House Gardens, Twyford, Winchester*



FIG. 21.—FRONTISPIECE OF "LE FLORISTE FRANÇOIS" (1654.)
(Reproduced from "Tulips.")

NOTICES OF BOOKS.

TULIPS.*

No flower, not even the Rose herself, has so much history behind it as the Tulip. From the time of its introduction into Western Europe in the 16th century the Tulip, what with its scientific problems like "breaking" and "thieves," what with romantic episodes like the Dutch Tulip mania of the 17th century, what with its attraction for the severest school of florists, has been the subject of continuous writing. The long tradition is now worthily carried on by Mr. Jacob, whose knowledge as a florist and gardener, whose antiquarian zeal, and whose cheerful appreciation of the elements of human nature manifested in the history of this remarkable flower have combined to produce a book which all Tulip lovers will want on their bookshelves. There are Tulips and Tulips, and Mr. Jacob adopts the simple garden classification of early-flowering singles and doubles, Cottage or May-flowering, Parrots, Darwins and Rembrandts, and species. Really, the classification might be reduced still further into species, earlies, and late flowering, for Parrots, Darwins, Rembrandts and Cottage Tulips all belong to the one great group that has the florist Tulip at its head. It is to this group that the interest attaches; to begin with, its origin is a mystery, because the variety was introduced ready made, as it were, and the wild species which went to constitute the original stock remain still unknown. Turkish manuscripts of the 14th century are extant which show that the Turks in the neighbourhood of Bagdad then grew named varieties of a Tulip with the essential characters of our own, i.e., a Tulip that began its life as a self-coloured flower and later broke into streaks and splashes on a clear ground. Now, no wild Tulip species possesses this property, nor do we get much suggestion from the acknowledged species of the materials which went to form the original complex. The deep-blue or black base with white sap and a crimson skin pigment are common to several Tulips of the central Asiatic and Mediterranean countries, while from some other parent must have come the self yellow colouring (a sap, not a skin colour), the clear base, and possibly the scent, which is found in species like sylvestris and Persica and in a few of the garden varieties, e.g., Sulphur among the florist Tulips and Prince of Austria among the earlies. Breeding experiments might throw light upon the origin, but as Tulip seedlings take from five to seven years to flower, and two or three successive generations would have to be raised, it is doubtful if anyone will embark on the task.

Mr. Jacob's book opens with a chronological and bibliographical table, beginning with Busquebius in 1554 and Gesner in 1559, and from this list the student who wishes for fuller information can learn the sources at his disposal. The only serious omission we have noticed is that of Mr. J. W. Bentley's series of articles in the *Journal of Horticulture* for 1895 or thereabouts, by far the fullest and most accurate account of the florist Tulip that has ever appeared, ending with a *catalogue raisonée* of the then known varieties, which preserves for us much of the knowledge and opinions of those keen critics, the working-men florists of the North. After a chapter on the Tulip mania, Mr. Jacob gets to work with his descriptions, and as he writes with the loving experience of many years of his own and other people's gardens this part of the book may be taken as a very safe guide to the best varieties for each and every purpose. Mr. Jacob's avowed favourites are the Darwins, with their superb colouring and vigorous, sturdy habit, proof against the vicious weather which is apt to descend upon us about the middle of May, equally beautiful, too, as garden plants and for table decoration. The eye that has been trained to florist Tulips finds something coarse and unrefined in the Darwins: the size, the leathery square-based petal and the dingy bases offend his instincts, but he cannot deny their superb habit and glow of health. Some day, by crossing and selection, we may hope to see Darwins and florists combined into a race possessing the excellences of both, but improvement moves tardily in so slow breeding a race. Chapters follow on cultivation, and Mr. Jacob rightly insists on two cardinal points: lift the bulbs every year and see that there is a sufficiency of lime in the soil. The land should not be manured directly for the Tulips; soil that has carried Potatos or other well-treated vegetable crops is best. Mr. Jacob recommends bone-meal; we have found basic slag even better. Finally, Mr. Jacob discusses bedding and combinations of Tulips with other flowers, all the outcome of considerable experience. But we must say a word of praise for the illustrations; coloured figures of Tulips exist from the earliest days of the flower, but even those in *Sweet's Guide* are little better than diagrams; now, at last, we have the flower itself. Anything more true to life than the Darwins on Plate III or the florist's Tulips on the first plate we have never seen. What a boon it would be for future generations of florists if all the notable flowers of this generation could be similarly photographed and a record set kept in the library of the Royal Horticultural Society!

(*To be continued.*) *D. Hall*

* *Tulips.* By the Rev. J. Jacob. (Present-Day Gardening Series.) T. C. & E. C. Jack, Edinburgh, 1912. Pp. 116. 1s. 6d. net.

The Week's Work.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir TREVOR LAWRENCE, Bart., Burford, Dorking.

ODONTOGLOSSUM INSLEAYI AND O. GRANDE.—Plants of O. Insleayi are pushing up their flower-spikes, and require a plentiful supply of water at the roots; in fact, the roots require more water from the time the spikes appear till growth is completed than at any other period. This species greatly resembles O. grande in its pseudo-bulbs and foliage, but the leaves are slightly longer. The blooms are very showy, and last fresh for a long time. The new pseudo-bulbs of O. grande are completed, and, until growth recommences, the roots should be kept on the dry side, but not so dry as to cause the bulbs to shrivel. Both these plants grow best on a high, dry shelf in a cool house. The yellow variety of O. grande named Pittianum is worth adding to any collection.

LÆLIAS.—The bright scarlet L. monophylla is a gem amongst Lælias, but the plant has always been considered a difficult subject to keep in good health for long. When well established and grown in a moist position in a temperature just a trifle higher than that of the Odontoglossum house, it grows and flowers freely. Last year I placed a small plant for trial with O. grande, and it has been kept moist at the root always. This specimen grew satisfactorily. Plants that have commenced to grow and require larger pots or fresh rooting-material should be attended to. Place them in small, well-drained pots in a mixture of small portions of Osmunda fibre and Sphagnum-moss in equal parts. Do not press the materials too tightly about the roots. Keep the plants in a well-shaded position at all times, and, during their growing period, spray them lightly overhead occasionally with clear rain-water. This small plant shows a great contrast in its growth with the taller L. harpophylla, which has bright, orange-red flowers. Any plant of this species that requires increased rooting space should be repotted. If the compost is exhausted and the plants enfeebled in consequence, no time should be lost before repotting them. Such plants should on no account be allowed to bloom the first season after they are repotted. Employ a similar mixture to that advised for L. monophylla, adding a good sprinkling of fine crocks. Never water the roots unless the soil is really dry, when sufficient moisture should be afforded to soak the compost thoroughly; if kept constantly moist the roots decay prematurely. A cool house is suitable for this species for at least eight months of the year, but while the plants are making their growth and flowering extra warmth, such as a Cattleya house provides, is beneficial. Recently-potted plants should be shaded from direct sunshine, or the slender stems and leaves will soon shrivel. Plants of L. rubescens (syn. acuminata) that have bloomed recently should be suspended close up to the roof-glass in a cool house where Dendrobiums are resting. If healthy the plant will need but little moisture until growth recommences; a little water may be afforded occasionally when the pseudo-bulbs or leaves show signs of shrivelling. Lælias of the Mexican types, including L. autumnalis, L. Gouldiana, L. albida, L. anceps and its many distinct varieties, are useful for furnishing blooms at this season. The majority of the plants have finished flowering, and should, if necessary, be afforded fresh rooting material before the new pseudo-bulbs commence to develop roots. In repotting do not disturb the old roots more than is absolutely necessary, or the plants may fail to furnish their full complement of flowers next season. Where there are five, six, or more pseudo-bulbs on one rhizome, the latter should, if it has plenty of live roots attached, be severed between the second and third pseudo-bulbs; if only few roots are present sever between the third and fourth ones. The larger portions may then be repotted into pots or pans of a suitable size. The discarded pseudo-bulbs may be used for purposes of propagation; if laid upon damp moss they may produce fresh growths. When potting keep the rhizome of each plant on a level with the rim of the pot, which should be about half-filled with materials for drainage. The compost should consist of Osmunda fibre only divided into small portions. Pot each piece rather firmly, but not so tightly as to prevent water passing freely through the compost. After repotting, and until each plant is re-established, afford water with discretion, merely watering around the outer edge of the soil to induce root action. If too much moisture is applied the old roots will decay. Keep the plants for the present in a temperature ranging between 50° and 55°, but increased warmth may be afforded as the new growths develop.

FRUITS UNDER GLASS.

By JAMES WHYTOCK, Gardener to the Duke of BUCCLEUCH Dalkeith Palace, Midlothian.

FORCING STRAWBERRIES.—The success in the forcing of Strawberries in pots depends to a large extent on the proper development of the crowns and on the pots being well filled with roots the previous autumn. Plants of the earliest batch that were plunged in a mild hot-bed composed chiefly of leaves at the beginning of December are in flower, and should be placed on a shelf near to the roof-glass in a house facing south, with a mean temperature of 60°. Pollinate the flowers carefully and admit as much fresh air as will be safe. The plants are very susceptible to attacks of red spider, and, although they may have been thoroughly sprayed with an insecticide on former occasions, it will be necessary, after the flowers are set, to syringe the foliage twice with soft tepid water daily, taking care to wet the undersides of the leaves. Promote plenty of atmospheric moisture by damping the paths and bare spaces in the house frequently. As the pots are well filled with roots, manure water may be applied frequently. The stimulant may consist of drainings from the cow-shed, or some quick-acting artificial manure in solution. The stimulant should be well diluted so that it may be applied often, but not when the fruits are ripening, as at that stage clear water only should be used. Plants for succession may be placed on a shelf near to the roof-glass in a Peach-house in which the trees have recently been started. Before bringing the plants under glass place the pots on their sides and syringe the foliage well with an insecticide. Remove a little of the top soil from the pots and replace with fresh loam mixed with a suitable fertiliser. Allow the plants to remain in the Peach-house until the fruits are set, when they should be removed to a warmer house.

MELONS.—If Melons are transplanted direct from the small pots in which they were germinated, the results will be better than if they are shifted first into larger pots. Plants raised from seed sown at the beginning of the present month will soon be ready for planting out. Prepare a hot-bed in advance, but this will not be necessary if bottom heat is available from hot-water pipes in a propagating case. Melons grow best in heavy soil mixed with lime rubble. Mounds of soil 18 inches wide and 9 inches deep will be sufficient at the start, but the planting should not be done until the soil is warmed to the temperature of the house. The roots will not require watering at the time of planting, as the moisture in the soil will be sufficient for some time to come. Promote atmospheric moisture by damping the walls, paths and bare spaces in the house, but do not syringe the plants heavily until they have commenced to grow freely. The mean temperature of the house should be 70°.

CUCUMBERS.—Plants raised from seeds sown in December are ready for planting. See that the house is scrupulously clean and free from insect pests. Prepare a hot-bed of stable dung and leaves, having previously sweetened the materials by turning them on one or two occasions. Cover the surface of the bed to the depth of a few inches with well-rotted leaves and place the mounds of fresh lumpy loam mixed with well-decayed manure at suitable distances apart. When the soil is warmed through the Cucumbers may be planted. The temperature of the house should be maintained at 70°. Keep the atmosphere moist by syringing the plants and damping the walls, regulating the amount of damping by the weather conditions. Fruiting-plants that promise to continue in bearing should be top-dressed with turfy loam, mixed with a suitable concentrated manure.

TOMATOS.—Plants raised from seeds sown last June are still furnishing a supply of ripe fruits. Those raised last October and growing in 6-inch pots may, when the first flowers are developed, be shifted into 10-inch pots in which they will fruit. The soil should be of a fairly light texture, and some manure from a spent Mushroom bed added to it. The plants should be grown in a light, airy house, having a temperature of 60°. Successional plants raised from seeds sown in December, and growing in 3-inch pots, should be placed on a shelf near to the roof-glass in a warm-house.

THE KITCHEN GARDEN.

By JOHN DUNN, Foreman, Royal Gardens, Windsor.

SEAKALE.—Crowns intended for forcing should be lifted carefully, before they commence to grow, and planted temporarily at the foot of a north wall. When doing this work, select suitable young roots for purposes of propagation. These should be cut into portions about 8 inches long, and planted in a horizontal position on a warm border, covering them with sandy soil to the depth of six inches. Place the cuttings as closely together as possible, so that a large number may be planted in a small space. During times of severe frost protection is necessary. By the beginning of April the plants will commence to form crowns, and may then be planted permanently on well-prepared land in rows 2 feet apart, allowing a space of 1 foot between the plants in the lines. Seakale should be grown in rich soil, and requires plenty of moisture at the root. It may be forced very easily in any dark place where sufficient heat can be provided to start the crowns into growth. If large supplies of this vegetable are required, forcing may be done in a deep pit provided with shutters, which must be rainproof, as dripping water is injurious. A little bottom heat is necessary. Place the crowns in about 9 inches of soil, which should be moderately moist, so that no further water will be necessary until the shoots are cut.

TOMATOS.—The earliest plants should be ready for transferring into their fruiting pots, receptacles 10 inches in diameter being the most suitable for the purpose. The potting soil may consist of three parts turfy loam and one part leaf-mould. Press the compost moderately firm about the roots, and fill the pots to within 2 inches of the rim. This space will allow room for a top-dressing of rich material when the fruits are set. After the plants are potted, place them on a gentle hotbed to promote root development, but admit air both night and day to prevent the plants from becoming drawn. The bottom heat is of great importance if ripe fruits are required early in April. Arrange the hotbed so that the first truss of flowers may be opposite the bottom wire of the trellis, which should be within 1 foot of the roof-glass. Keep the atmosphere of the pit dry during the time the fruits are setting, in order that the pollen may disperse. Sow seeds for successional plants, and germinate them in a temperature of 55°. When the seedlings are well through the soil, place the seed-pan to within a few inches of the roof-glass, and, as soon as they are large enough, pot them singly in 3-inch pots in a compost of two-thirds sandy loam and one-third leaf-mould. Do not press the soil too firmly. Afford water sparingly until the plants commence to grow freely. A temperature of 60° will be suitable from this stage onwards.

LETTUCE.—Plants in cold pits intended for use during the spring should be afforded air freely to prevent damping, which is very troublesome during dull, mild weather. Stir the surface of the bed frequently, and remove decayed leaves. The lights may be removed entirely on fine, warm days, but they should be replaced at night-time, tilting them to prevent water dripping on the plant.

ONIONS.—If large bulbs are required, a sowing of one of the large-rooted varieties should be made at once. Sow in boxes in a slightly-heated pit. The boxes (or pans, if these are used) should be well-drained and filled with a mixture of fine, sandy loam and leaf-mould. Press the soil firmly, and sow the seeds thinly. As soon as the seedlings appear, afford sufficient ventilation to keep them sturdy. A sowing of Leeks may also be made now, affording the same treatment for the time being as recommended for Onions.

PLANTS UNDER GLASS.

By F. JENNINGS, Gardener to the Duke of DEVONSHIRE, Chatsworth, Derbyshire.

PROPAGATION FROM CUTTINGS.—Attention should be given to the propagation of Codiæums (Crotons) and Cordylines (Dracænas). Ringing may be practised with Crotons, binding the cut stems tightly with ordinary wood-moss and sand. Both Crotons and Dracænas should be cleansed thoroughly before the cuttings are taken, sponging the leaves with soluble paraffin. Cuttings of Coleus should also be inserted to furnish early plants. Where Fuchsias and Heliotropes are grown for flowering indoors, the plants which have been dormant for some time should be introduced into gentle heat. Start the plants into growth before pruning them.

TREE CARNATIONS.—Cuttings that were inserted in boxes during the first week in January should now be rooted and may be removed into a light house, when a little air can be admitted. It is an advantage to propagate the plants in boxes, as they may be hardened before they are potted. Where space is limited it is a mistake to grow too many varieties. Select, say, six or eight choice sorts which do best in the particular district; May Day, Enchantress, Carola or Triumph, Winsor, White Perfection, White Enchantress, Britannia, and Mikado are suitable varieties for our district. Old plants should be fed regularly; do not use liquid manure, but Clay's fertiliser and soot mixed in equal quantities. The stimulant may be applied once a week at the rate of a dessertspoonful to each plant. Do not wet the stems of the plants with the liquid.

SEEDS.—Sow seeds of Amaryllis, Begonia, Clerodendron, Celosia, Coleus, Eucalyptus, Grevillea, Jacobinea, and Saintpaulia.

PELARGONIUMS.—If cuttings of winter-flowering Pelargoniums have not been inserted already the work should be done at once. For standard plants choose those with straight main shoots and remove the others. Train the plants to stakes and grow them in a warm-house until the stems have reached a suitable height. Feed the roots with artificial manure, and later transfer them into their flowering pots. The scented-leaved variety Clorinda is very suitable for growing as standards; the cuttings should be inserted at this period. The plants, when rooted, should be grown in a warm-house until they reach the required height, when they must be hardened gradually.

SMILAX AND ASPARAGUS FOR GREENERY.—Where large quantities of Smilax are required for decorating purposes it is a good plan to sow the seeds in pans, and germinate them in bottom heat. When the seedlings are large enough to handle pot them in thumb pots, and later in 4½-inch pots, employing a mixture of good loam, leaf-mould, and sand as the rooting medium. Place them in a warm propagating house or on a shelf in the stove; when they are established they may be planted out and trained against the back wall of a vinery, Peach-house, or any other suitable place. At Chatsworth we plant them in a strong board trough made about 9 inches deep and 9 inches wide, and the length of the wall. Crocks are placed at the bottom for drainage. The shoots are trained up fine green string or thread. By cutting the stronger growths first a supply of greenery may be obtained all the autumn. Seeds of Asparagus Sprengeri sown now will furnish plants that will produce long sprays in autumn. Afford similar treatment to that recommended for Smilax, but grow them in large baskets lined with rich loam and filled with good soil, leaf-mould, and mortar rubble. Place two or three clumps of plants in each basket, and when they are well rooted soak the soil once a week with liquid manure made from cow-dung. The baskets may be hung from the roof of a conservatory or any warm-house.

CYCLAMEN.—Most gardeners prefer to sow seeds of Cyclamen in the autumn, either during August or September. Seedlings raised at that period should be well established in thumb pots. Keep the surface of the soil free from Algæ and other green growth. Plunge the pots in fibre near to the roof-glass in a house having a temperature of 60° to 65°. See that the soil does not become dry, and syringe the plants first thing after breakfast and again after dinner. Keep a sharp look-out for green fly, which must be destroyed.

THE FLOWER GARDEN.

By EDWARD HARRISS Gardener to Lady WANTAGE, Lockinge, Berkshire.

PREPARING GROUND FOR SUMMER BEDDING.—If the flower-beds are vacant the soil should be dug or trenched as may be considered necessary. It is not always possible to obtain a sufficiency of well-rotted farmyard manure, but this material may be supplemented with leaf-mould and decomposed or burnt garden refuse. Heavy, retentive land may be made more open in texture by annual dressings of burnt garden refuse, road scrapings, or even coal ashes. Soot and lime are both valuable materials for sweetening and enriching soil, and should be used liberally. The weather has been unfavourable for digging operations, especially in shrubberies where the land is heavy. Take advantage of every favourable opportunity to complete this work. Hollow places in roads and paths where water accumulates should be made good, and water-logged ground near trees should be drained. Lawns should also receive attention in this matter, as coarse grasses and moss grow in water-logged ground and spoil the turf. The present is a suitable time to apply mulchings of manure or fresh soil to trees in the pleasure grounds. Specimens showing signs of exhaustion should have their surface roots bared and covered again with rich materials. The trees will soon give evidence of the benefit of these small attentions. The ground should be prepared for spring planting as soon as possible so that the soil has time to settle before planting is done. Trench 2 or 3 feet deep, using plenty of manure and fresh soil if the ground is of poor quality. Low-lying places should be drained, using old bricks, clinkers, or stones.

ROSES.—If severe frosts occur tender varieties will need some protection. Bracken Fern or branches of evergreens securely adjusted will be sufficient to protect ramblers planted against walls or trellises. The planting of Roses should be finished as soon as possible. If the specimens in the Rose-beds show signs of deteriorating, lift them and trench the ground, adding plenty of well-rotted manure and fresh soil before planting the beds afresh. Climbing Roses should be treated in a similar manner. If the pruning of climbing Roses is not completed the work should be no longer delayed, as growth is advancing rapidly.

VIOLETS IN FRAMES.—The weather has been favourable for Violets in cold frames, as it has been possible to remove the lights almost daily since they were planted. Slugs, which are plentiful this season, must be guarded against. Remove decaying leaves and flowers and stir the soil between the plants lightly with a pointed stick, afterwards applying a top-dressing of loam mixed with decayed leaves and dung. Continue to admit plenty of air to the frames, removing the lights entirely during favourable weather.

CARNATIONS.—Rabbits and game are very destructive to Carnations, and measures must be taken to protect the plants from them. When the ground is dry enough give the surface a light dusting with soot, then stir the soil between the plants with the dutch hoe. In exposed situations place a few evergreen boughs amongst the plants as a protection. Admit plenty of air to plants growing in frames when the weather is mild. Examine the soil occasionally to see if water is necessary. If the plants are well rooted applications of weak soot-water will be beneficial.

THE HARDY FRUIT GARDEN.

By B. GOODACRE, Gardener to Sir ERNEST CASSEL, Moulton Paddocks, Newmarket.

THE WEATHER.—At the time of writing these notes the weather is very wintry and heavy falls of snow have put a stop to most work out-of-doors. I have previously stated that it is not wise either to plant or prune during times of frost; in fact, the less trees are handled at such times, the better, for much damage may be done, the results of which will not be apparent until later. If the ground continues frosted planting of all description should be discontinued, and such trees as are awaiting planting, including any received from the nurseries, should be stored in a cool, dark shed, without unpacking them. If the weather is not very cold and other conditions are suitable they may be unpacked carefully and heeled in a sheltered spot. Cover the roots with a good layer of loose litter, or it may be placed on the ground over them, the latter being, perhaps, the best plan. Trees are sometimes injured by placing them in draughty sheds, and this must be guarded against. During times of frost mice, hares, and rabbits may cause considerable damage to the trees by gnawing the bark. It is a good plan to coat the stem and lower branches with a mixture of manure and quassia, adding water until the mixture is of a suitable consistency. The fluid may be applied by means of a whitewash brush. Some growers use coal tar for the purpose. This is satisfactory in keeping the vermin away, but the tar becomes unsightly during the summer, whereas the other mixture becomes washed off in time by the rains. Where hares are troublesome the mixture known as Benardene may be employed. A soft cord should be run around the outskirts of the plantation at a height of about 6 inches from the ground, and supported at intervals of 2 yards by short sticks. The cord should be smeared with Benardene, repeating the application about every ten days. Hares will not pass over or under the cord.

WALL TREES.—The materials for nailing and labelling the trees may be prepared under cover. Old shred and nails should be sorted, and those that are fit for use again cleansed thoroughly. Old nails are usually made red-hot and then plunged in oil. The shreds may be placed in hot water to destroy eggs of insect pests. Whether ordinary wall nails are used or those known as Francis wall nails, it is a good plan to immerse them in linseed oil for a time. New labels may be prepared and written, but they should not be attached to the trees at present nor the old ones removed, as this will entail trampling on the ground, which is harmful, whilst it is sticky after frost.

THE FRUIT-ROOM.—The present affords a suitable opportunity to overhaul the fruit in the fruit-room. Specked or decayed fruits should be removed, but the work must be done with great care as fruit is easily damaged after it has been kept until this date. Our Pears have kept very badly, consequently those that are sound are very valuable. The temperature of the fruit-room must not fall too low on cold nights; at the same time the atmosphere should not be stagnant, admitting air on all favourable occasions.

BUSH FRUITS AND PLANTING.—The remarks printed on p. 7 were not perfectly clear. Under "pruning" the first clause related to bush fruits such as Gooseberries and Currants. In the note on planting it should have been stated that the rotted manure, broken bones, oyster shells and soot are to be mixed with the soil during the work of trenching. It was not intended to recommend the placing of a layer of such materials immediately over the improvised drainage.

JACOBINIA CHRYSOSTEPHANA.

THIS species is one of the most attractive winter-flowering plants for decorative purposes. Well-grown specimens in 6-inch pots possess from six to eight heads of bloom, and when at their best rival the ever-popular Poinsettia for beauty and effect. The rich orange-coloured flowers continue in a fresh state for several weeks. Although this Jacobinia has been in cultivation a good many years, it is not very widely grown in private gardens; but I feel sure, if it were better known, it would become a favourite Its cultivation is quite simple. The best plan is to root cuttings in the spring, and grow them on in an intermediate temperature. When the young plants have made four pairs of leaves, remove the points of growth to induce the formation of side shoots, and in very bright weather afford a slight shade during the middle of the day. A compost consisting principally of good fibrous loam, with a little leaf soil and silver sand added, suits them admirably, and firm potting is essential. Occasional applications of weak soot water help to develop rich, green foliage, and later on some approved fertiliser will assist in the formation of the flower heads. The plants should be kept free from scale and other pests. When they are in flower a temperature of from 55° to 60° is the best chrysostephana also lends itself to cultivation on a rockery in a conservatory or winter garden *J. Gardner, Batsford*

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS, 41, Wellington Street, Covent Garden, London.** *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

Newspapers.—*Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see.*

APPOINTMENTS.

SATURDAY, JANUARY 18—
British Gard. Assoc. meet at Cardiff. (Lecture by Mr. W. W. Pettigrew on "Kew: Its Influence on Horticulture.")

TUESDAY, JANUARY 21—
Royal Hort. Soc. Coms. meet. Royal Inst. meet. (Lecture by Prof. Bateson, F.R.S.)

THURSDAY, JANUARY 23—
Gardeners' Royal Ben. Inst. Ann. Meet. and Election of Pensioners, at Simpson's Restaurant, Strand, at 2.45 p.m. Royal Inst. meet.

FRIDAY, JANUARY 24—
Royal Inst. meet. (Lecture by Prof. John Oliver Arnold.)

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich—38·8.

ACTUAL TEMPERATURES:—
LONDON.—*Wednesday, January 15* (6 P.M.) Max. 48°; Min. 39°.
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—*Thursday, January 16* (10 A.M.): Bar. 29·4°; Temp. 43°; *Weather*—Fine.
PROVINCES.—*Wednesday, January 15:* Max. 48° Preston; Min. 37° Valencia.

SALES FOR THE ENSUING WEEK.

MONDAY—
Perennials and Herbaceous Plants, Liliums and other Hardy Bulbs, at 12; Roses and Fruit Trees, at 1.30; at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

MONDAY AND WEDNESDAY—
Rose Trees, Shrubs, Liliums, Gladioli, &c., at Stevens's Auction Rooms, King Street, Covent Garden, at 12.30.

WEDNESDAY—
Herbaceous Border and other Plants, Hardy Bulbs and Tubers, at 12; Special Sale, Roses and Fruit Trees, at 1.30; Palms and Plants, at 5; at Protheroe & Morris's Rooms.

THURSDAY—
Miscellaneous Bulbs and Roots, at 11; 3,169 cases Japanese Liliums, at 2.30; at Protheroe & Morris's Rooms.

FRIDAY—
Hardy Border Plants, Bulbs and Tubers, at 12; Roses and Fruit Trees, at 1.30; Orchids, at 12.45; at Protheroe & Morris's Rooms.

The Sweet Pea.

Those interested in the cultivation of this flower will do well to read the whole of *Bulletin* No. 320, Cornell University, which contains valuable information on various aspects of its cultivation and history. The first section of the *Bulletin*, which is the third of the series devoted to Sweet Pea studies, deals with the genus Lathyrus, and contains an artificial key to and description of the species of that genus.

The second section on the Sweet Pea in Botany and Horticulture, opens appositely with Keats' lines:—

Here are Sweet Peas on tiptoe or aflight
With wings of gentle flush o'er delicate white
And taper fingers catching at all things
To bind them all about with tiny rings.

The botanical history of the flower dates from 1695, in which year it appears as "Lathyrus distoplatyphyllus hirsutis mollis, magno et peramoeno flore odoro"—the Lathyrus with broad, divided, downy leaves and large flowers of pleasant odour. The first illustration and description are contained in Commelin's *Hort-Medici Amstelodamensis* (1697-1701). Commelin states, in his description, that he is "sowing seed of this most elegant and very pleasant plant lately received from the Reverendo Patri Francisco Cupani—the learned monk and enthusiastic naturalist of Panorini, to whom the above diagnostic name is due." Commelin continues: "This Lathyrus, an annual, rises to a height of 6 or 7 feet. . . . From the wings of the leaves spring butterfly-like flowers, which are large and have a purple standard, the remaining petals are sky-blue"—no doubt therefore that the wild prototype was a bicolor! Commelin's drawing, which we reproduce (fig. 22), will have at least a sentimental interest to those of the Sweet-Pea cult.

The oldest specimen is, as Mr. Beal tells us, in Plukenet's Herbarium, which forms part of the Sir Hans Sloane collection, and dates from 1700.

Ray (*Historia Plantarum Generalis*, 1688-1704) describes Lathyrus Major e Siciliæ: "A very sweet-scented Sicilian flower with a red standard; the lip-like petals surrounding the keel are pale blue. Its seed-pod is hairy." Ray also uses the description of Cupani cited above.

It is evident that the plant grew rapidly in popular favour. Mr. Petiver mentions it in a paper in the *Phil. Trans.* (1713) as a rare plant to be seen in several curious



FIG. 22.—THE FIRST ILLUSTRATION OF A SWEET PEA: FROM COMMELIN'S DRAWING IN "HORT-MEDICI AMSTELODAMENSIS" (1700).

gardens about London, "particularly in the Society of Apothecaries Physick Garden at Chelsea." The standard of these plants is still red, and the wings are still blue. Gerard and Parkinson make no mention of the novelty. H. B. Ruppi, in *Flora Jenensis* (Francfort, 1718), after describing the Sweet Pea under one of its many aliases (L. Siculus Ravini), and stating that it is called generally in gardens the musk-scented Lathyrus, puts on record the first sport. "Sometimes it varies with a white flower"; and so history continues to tantalize the earnest inquirer by meagre, running comment till the time of Linnæus, who stood godfather to our plant, naming it L. odoratus.

Mr. Dicks has contributed valuable information (in *All About Sweet Peas*), obtained from Mr. G. Sprenger, as to the habitat of the plant. The latter gentleman, at Mr. Dicks's instigation, obtained the information that the Sweet Pea is native of Sicily and Sardinia.

So far, we have sailed in the open; but now we approach shoal water. There is a Sweet Pea from Ceylon, Lathyrus Zeylanicus, described by Burmann in 1737. It also has sweet-scented flowers; it is not, however, content with bicolors, but produces white and red and variegated blossoms. The Ceylon Sweet Pea of Burmann differs from its Sicilian rival only in flower colours. Burmann never visited the island; Thwaites and Trimen, two of the best systematists of their time, lived in Ceylon for many years—writing from memory, we should say that they spent between them 50 years in working out the flora of the island. Yet Trimen does not mention a Lathyrus odoratus—though he had access to Thwaites's notes and herbarium, and though he was an indefatigable explorer. Wherefore we are disposed to conclude, with Mr. Beal, that the Ceylon Sweet Pea is a myth, and that Burmann's white and red and white plants were sports from the Sicilian bicolors introduced from Sicily in 1699.

That variation grew apace is evident. Miller (*Gardeners' Dictionary*, 1731) refers to the existence of two sorts, one white and the other "has pale red flowers which are called by gardeners Painted Lady Peas."

And purple (bicolor), white and Painted Lady the Sweet Peas seemed to remain for half a century, till John Mason offered in his catalogue—published at "The Sign of the Orange Tree in Fleet Street" in 1793—black, purple, scarlet, white and Painted Lady Peas.

Stripes came in in 1817, and in 1837 Mr. Carter, the founder of the firm of Messrs. J. Carter and Co., offered all five of Mason's varieties, together with a striped form. Five had increased to nine varieties by 1860; one of the nine "Blue Edged," appears, however, to have been raised by crossing L. odoratus and Lord Anson's Pea, L. Magellanicus. It changed its name to Blue Hybrid, and received a F.C.C. in 1883.

On the more recent history of the flower we cannot dwell. It constitutes a record of acumen and industry on the part of many firms and many gardeners which we hope to recount in an early issue. Nor may we deal at present with the equally honourable record of American raisers. All gardeners with a taste for history will read Mr. Beal's *Sweet Pea Studies* with keen enjoyment, and will be more than ordinarily grateful to him for the pains which he has bestowed on a fascinating but difficult subject.

Coloured Plate.—The subject of the coloured plate to be published with the next issue is Anemone pulsatilla rosea "Mrs. Van Der Elst."

ROYAL HORTICULTURAL SOCIETY.—The next meeting of the Committees will be held in the Vincent Square Hall, Westminster, on the 21st inst.

SHROPSHIRE HORTICULTURAL SOCIETY.—We understand that Mr. GEORGE BRAZIER has been appointed to succeed Messrs. ADNITT & NAUNTON as secretary of the Shrewsbury Show. Mr. BRAZIER has assisted the late secretaries for many years past, and is known to many who visit the show.

GARDENERS' ROYAL BENEVOLENT INSTITUTION (WORCESTER AUXILIARY).—The annual meeting of the Worcester and District Auxiliary of the Gardeners' Royal Benevolent Institution was held on the 8th inst. Mr. C. E. PIPE presided. The Committee's report drew attention to the greatly-increased membership, and stated that the Auxiliary was the strongest connected with the Institution. Valuable assistance had again been afforded by the opening of Madresfield and Davenham Gardens to the public, in aid of the funds, and they offered their thanks to Earl BEAUCHAMP and to Mr. C. W. DYSON PERRINS. The balance-sheet showed that the receipts (including £6 7s. 10d. balance brought forward) amounted to £132 14s. 2d., and that the expenditure had been £130 7s. 6d., leaving a balance of £2 6s. 8d. They had forwarded £120 to the hon. treasurer, Sir HARRY J. VEITCH. Earl BEAUCHAMP was re-elected president of the branch. Alderman A. H. CONSTANCE presided at the dinner which followed the annual meeting.

YEAR-BOOKS AND DIARIES FOR 1913.—As usual at this season our desks are well furnished with year-books and diaries. The following notes refer to some of those of most interest to our readers:—

R.H.S. Diary.—This diary published by the Royal Horticultural Society is issued for the second time. It provides a useful diary for gardeners, and the information and fixtures, &c., contained are the result of a wise selection. The price is 1s.

My Garden Diary.—Messrs. SUTTON & SONS have prepared, as usual, in the daintiest fashion their little garden memorandum book. The title, *My Garden Diary*, hardly comprises its whole scope, for the diary pages are interleaved with helpful and practical hints on general culture. A charming garden scene, printed in soft colours on each cover, gives a finish to this little book, which will prove an acceptable present to every garden lover.

The current issue of *Who's Who* forms the 65th edition of this valuable work of reference, which has been revised with much care, and is issued by Messrs. A. and C. BLACK at the price of 15s. The same enterprising firm of publishers are to be congratulated upon their new venture, a "Dictionary of Standard Books," which comes to us under the handy and succinct title, *Books that Count*. It supplies a compressed bibliography on almost every subject. The indices (one of authors and one of titles) are excellent, and the arrangement of the subjects—a difficult matter in a book of this scope—extremely good. The price is 5s. net.

The Englishwoman's Year-Book and Directory (also from the hands of Messrs. BLACK) is now quite an institution and indispensable to many thousands of women. The advice given as to the choice of a profession is extremely practical and useful, and will be of the greatest possible service to those in need of counsel. The price is 2s. 6d.

The Writers' and Artists' Year Book is one of Messrs. BLACK's most useful productions, and must prove a boon to many a professional and amateur journalist. It is brought thoroughly up-to-date every year, and contains full and accurate lists of the chief journals, not only English, but American and Colonial. We even find a list of cinematograph firms who are willing to accepts plots for films—a sign of the popularity of the picture-theatre. The price of the book is 1s.

The Horticultural Directory has made a punctual appearance this year, and will be welcomed by the many horticulturists who find it an indispensable address book. It is, in fact, rather more than this; besides giving exhaustive lists of gardeners, nurserymen, country houses, &c., there is at the beginning quite a mass of useful information of various kinds, including tables of weights and measures, recipes for destroying pests, and other matters. The book is published by the proprietors of the *Journal of Horticulture*, and the price is 1s.

The Irish Farming World Directory and Annual for 1913 will be welcomed by those interested in Irish affairs and agriculture. It is published at the office of *The Irish Farming World* at the modest price of 9d., and gives a large quantity of useful and interesting information and photographs of Irish prize cattle.

Vinton's Agricultural Almanac and Diary for 1913, price 1s. Messrs. VINTON & Co. have taken great pains in the compilation of this little book, which contains much information of a character likely to be indispensable to the farmer and breeder.

The Photographic Almanac, published yearly by Messrs. H. GREENWOOD & Co., is this year more attractive than ever. All who are interested in photography, either as a profession or as a hobby, will welcome this useful compendium of information on the subject. Colour photography becomes more and more a feature, and we find several good examples of the three-colour process.

The Small Holders' Year Book, the second issue of which is published by Messrs. C. ARTHUR PEARSON, LTD., gives information of a clear and succinct character. The price of the book is 1s.

PRESENTATION.—Mr. T. W. BIRKINSHAW, who is giving up the position of head gardener at Hatley Park Gardens, Bedfordshire, has received a presentation from Sir CHARLES HAMILTON, Bart., in the shape of a piece of silver as an acknowledgment of his services during the nine years Mr. BIRKINSHAW has served at Hatley Park. In this period many alterations and additions have been carried out.

FRUIT-GROWING IN NOVA SCOTIA.—An experimental fruit farm has been established at Kentville, in the heart of the Annapolis Valley, the famous fruit-growing district of the province; and Professor CROWE, the well known fruit expert from the Ontario College of Agriculture, has been appointed director. Money has been voted for the enlargement of the Nova Scotia Agricultural College.

SWEET PEA ANNUAL, 1913.—A valuable contribution in this excellent little volume is Major HURST'S paper on "Rogues in Sweet Peas," read at the annual conference and reported in the *Gardeners' Chronicle*. The discussion which followed the paper makes interesting reading. No one knows more about the raising of new varieties than Mr. W. CUTHBERTSON, whose article on the subject will be read with interest by all Sweet Pea enthusiasts. The fullest details are given, as the instructions are intended for amateurs. Impressions of last year's show, written by Mr. LESTER L. MORSE, of San Francisco, prove that the British grower is pre-eminent. "I had heard and read much about the wonderful results the English Sweet Pea grower secures in size of bloom, length of stem, breadth of leaf, &c., but I was not prepared for the impressions these giants would make on me." After praising the R.H.S. hall for its excellence and condemning it for being too small, Mr. MORSE finds fault with the confusion of names. "A hundred varieties I thought I easily recognised were shown under names I had never heard of, and frequently one variety bore four to six names." But there is plenty of praise—"the show itself was marvellous." Mr. J. A. BULL shows how to overcome the evil of streak disease by a system of manuring, attributing the complaint to a lack of potash in the soil. Much of the book consists of tabular matter, but no reference is made to the annual meeting.

RHODESIAN RESTRICTION ON POTATOS.—We learn from the *South African Agricultural Journal* that the Southern Rhodesia Government, by a regulation dated October 3, 1912, prohibits the importation of Potatos from other parts of South Africa or from oversea, if found on inspection to be infested with the pest known as "root gall worm" (Heterodera radicicola). Infested tubers will be refused admittance to Southern Rhodesia or destroyed. The root gall worm, sometimes called Potato eel worm, occurs commonly in Potatos grown in most parts of the Union, and shippers of Potatos to Southern Rhodesia will need to exercise great care not to have infested tubers included in their consignments. The presence of infestation is generally indicated by nodular swellings about the size of split Peas, on the surface of the tuber, and on removing a thick peel from such tubers watery-looking spots, about the size of a pin head, are to be seen under the swellings.

ELEMENTARY SPECIES.—Mendelism appears to be making trouble for the systematist—paying him in kind for the multiplicity of names with which he has endowed our science. Each time an investigator undertakes breeding experiments with a "species" he discovers that the species is an aggregate of definitely dissimilar things. These dissimilar members of the species fall into groups, which are sometimes very numerous. These groups form the *petites especes* of JORDAN or the elementary species of DE VRIES. It is idle to dismiss them as varieties, for that but lays the person who does so open to the unanswerable question, varieties of what? We must therefore recognise that a species has only a subjective existence, and that the term is tolerated only because of its convenience. It implies—at least in many cases—a collection of elementary species which stand to the species in much the same way as the latter stands to the genus of which it is a member. The most recent account of elementary species is that given by Professor TROW in the *Journal of Genetics*. His investigation of the species Senecio vulgaris—the common Groundsel—shows that it contains 12 elementary species, which may each be bred true to type for several generations—and probably for an indefinite period. Observations of this kind are to be commended, for they throw a suggestive light on the so-called variation which occurs in our cultivated plants. The usual idea is that under cultivation a definite and stable form has begun to vary, and has gone on varying till it has produced the almost infinite variety of form and colour with which we are familiar in many garden plants. But it may well be that the seeds of this variation were present in the wild form and, more than this, not only the seeds but also the fruits. In other words, it seems probable that what the nurseryman has done in many cases is to cross various elementary species and so effect combinations of characters which, by reason of the effective isolation of the elementary species, have no opportunity of arising in nature.



[*Photograph by R. A. Malby, F.R.P.S.*

FIG. 23.—ÆTHIONEMA CORIDIFOLIUM IN THE PONT DE NANT ALPINE GARDEN, SWITZERLAND.

PUBLICATIONS RECEIVED.—***Small Gardens for Small Folks,*** by Edith Loring Fullerton. (Philadelphia: W. Atlee Burpee & Co. Price 5 cents.)—***Der Konigliche Botanische Garten und das Koniglich Botanische Museum zu Dahlem.*** (Berlin: Horn & Raach).—***Unsere Freiland-Laubgeholze,*** by Ernst Graf Silva Tarouca. (Leipsiz: G. Freytag).

A SWISS ALPINE GARDEN.

(See figs. 23, 24 and Supplementary Illustration.)

IN Switzerland, as in this country, a difficulty is experienced in growing many of the rarer Alpine plants in botanic gardens, more especially in those which are situated at comparatively low elevations. It is owing to this fact that several gardens have been established in the mountains in favourable situations, where the plants grow satisfactorily, for the conditions in these higher altitudes are more like those the plants enjoy in their own habitats. During the winter months in these high elevations the plants are covered with snow, ready to burst into flower the moment it melts.

Among the first gardens of this kind was one made by Mr. H. Correvon. It is situated in the Valais and is known as the garden of La Linnæa. Here many of the more difficult plants are grown with complete success, which would be impossible in the warmer climate of Geneva.

Another successful garden, which I had the pleasure of visiting during the past season, is one made by Dr. Wilczek, of the Lausanne University Botanic Garden, and situated in the Val de Nant. After an interesting journey of about three hours from Bex up the beautiful Val de L'Avençon, in the Vaudois Alps, we arrived at the Pont de Nant (see Supplementary Illustration). It is situated at the lower end of the Val de Nant at an elevation of over 4,000 feet above sea level.

The garden is situated at the base of a huge vertical bluff several hundred feet high, with a north-west aspect, but it receives the full sunshine after 10 a.m. The general design of the garden represents a group of mountain peaks and ridges of various heights, with narrow paths and valleys winding up and down between them. This arrangement provides a great variety of aspects, ranging from full exposure to sunshine to complete shade. The garden cannot be described as picturesque with its rounded heaps of stone and soil varying in height from 3 feet to 6 feet only. But the surroundings compensate for any lack of beauty in the garden itself, for, looking up the Val de Nant, a beautiful view of the valley is obtained. At its head is the Glacier des Martinets, backed by the snow-capped mountains behind, while in the opposite direction may be seen the Grand Moveran towering above its smaller neighbours.

In building the rock garden, stones collected in the vicinity are used in the most suitable way necessary for the requirements of the various plants, no note being taken of the natural lie of the strata. The soil is of a very gritty nature, and consists chiefly of rocky debris, which is eminently suitable for mountain plants, as it ensures perfect drainage and provides a free medium for their long, ramifying roots.

At the middle of June the garden was full of most interesting and beautiful plants, whilst many of them were in full flower. In fissures made by placing two large stones together, on rocky ledges, or in pockets of the gritty soil itself, certain plants which are diffi-

flowering profusely. Among the more interesting plants noted was the lovely little Lebanon Candytuft, Æthionema coridifolium (fig. 23), with its rose-pink coloured flowers on stems only 1 or 2 inches high. Others of the same genus noticed were Æ. Thomasianum from the Piedmont, and a charming hybrid of Æ. grandiflorum with racemes of bright-pink flowers shorter than in the parent plant. Asperula nitida or Gussonii, as it is sometimes called, which seldom flowers freely in British gardens, presented abundant masses of pink flowers. I also noticed in good condition A. hirta from the Pyrenees, a taller plant than the last, with paler flowers. Another Pyrenean plant, Arenaria purpurascens (illustrated in fig. 24) was growing on a stony bank, and was covered with purple flowers. *W. I.*

(To be continued.)

NOVELTIES OF 1912.

(Concluded from p. 19.)

AN interesting point in connection with the plant novelties of the past year is the fact that European gardens have again gained a number of new shrubs and plants from China, mainly due to the efforts of Messrs. James Veitch & Sons and Messrs. Bees Ltd. There are destined to provide even greater variety in flowers and in foliage than is enjoyed at present. Messrs. JAMES VEITCH & SONS secured Awards of Merit for a good number of subjects of this class, together with some species requiring greenhouse treatment. Some of the best of Messrs. VEITCH's novelties from China and elsewhere were Cotoneaster amoena and C. Harrowiana; Prunus Pissardii Moseri flore pleno, Pyrus Veitchiana, Berberis Stapfiana, Philadelphus Bouquet Blanc and Voie Lactee; Viburnum Davidii, Kniphofia John Benary, Deutzia Veitchii, Eremurus Lemon Queen, and Primula Knuthiana. Among greenhouse plants Begonia Optima and Emita, two fine hybrids from B. socotrana; Rhododendron (Azalea) indicum "Blushing Bride," R. Clorinda (a Javanico-Jasminiflorum hybrid), the charming decorative Cinerarias hybrida and Pompadour; Camellia cuspidata, and Elæocarpus cyaneus.

The Hon. VICARY GIBBS, Aldenham House, Elstree (gr. Mr. E. Beckett), has done much to popularise recent introductions in shrubs and decorative plants from China by the extensive collections which he has shown at the Royal Horticultural Society. He received a First-class Certificate for Cotoneaster divaricata and Awards of Merit for Cotoneaster salicifolia rugosa, C. Zabelii, Corylopsis Veitchiana, Hydrangea Sargentii, and Ribes laurifolium.

Miss WILLMOTT, Warley Place, Essex (gr. Mr. Fielder), secured Awards of Merit for Primula warleyensis, a pretty little mauve species, Deutzia longifolia, Corylopsis multiflora, Tropæolum albiflorum, and Lilium warleyense.

Lieut.-Col. Sir GEORGE HOLFORD, K.C.V.O. (gr. Mr. Chapman), had many good varieties of Hippeastrum in the extensive group staged at the International Exhibition at Chelsea, and H. Musigny and H. Rose du Barri, for which Lord ROTHSCHILD received Awards of Merit on March 19, were two of the finest ever shown. H. "Ruby Queen" and "Pink Perfection," exhibited by Messrs. R. P. KER & SON, Liverpool, were very showy and distinct.

FERNS.

Messrs. H. B. MAY & SONS have for their certificated novelties Nephrolepis exaltata Willmottæ, N. e. muscosa (F.C.C.), Adiantum cuneatum micropinnulum, Polypodium Vidgenii and Lastrea patens Mayi.

Mr. W. A. MANDA, St. Albans, secured an Award for Polypodium Mandaianum; Messrs. PARKER, Whetstone, for Asplenium divaricatum elegans and Pteris Parkeri; Mr. W. B. CRANFIELD, Enfield, for Scolopendrium vulgare crispum nobile, and Messrs, HILL & SON, Edmonton, for Polypodium Hillii.

NARCISSI AND TULIPS.

Last season saw some excellent novelties in Narcissi. Robespierre, with a large orange-coloured cup, and Rubalite, white with orange-red eye, both shown by Mr. A. M. WILSON, Bridgwater, obtained Awards of Merit, and a similar Award went to Helios, exhibited by Messrs. W. T. WARE.

Crœsus, shown by Mr. A. M. WILSON, secured a First-class Certificate, and Killiecrankie and Pedestal were from the same raiser. Other novelties distinguished in 1912 were Ernest H. Krelage (Messrs. KRELAGE & SON), Deepdale (Mr. W. A. MILNER), Flame (Messrs. W. T. WARE), Florizel and Ruby (Messrs. BARR & SONS), Nemesis (Messrs. CARTWRIGHT & GOODWIN), Seville (Mr. H. D. PHILLIPS), Silver Spangle (Mr. F. H. CHAPMAN), and Trafalgar (Mr. W. A. MILNER).

Of Tulips Velvet King (Messrs. BARR & SONS) and Grenadier (Messrs. T. WARE) received Awards of Merit.

OTHER FLORISTS' FLOWERS.

Apart from such groups as Roses, Dahlias and Carnations, certain other florists' flowers have yielded their proportion of novelties to the total of the year. Begonias of the winter-flowering class received some very fine new varieties raised by Messrs. CLIBRAN'S, Altrincham, and this firm received Awards of Merit for Lucy Clibran, double salmon-pink; Splendour, semi-double, reddish-scarlet; Eclipse, salmon-rose; Scarlet Beauty, Clibran's Pink and Eclipse, all of them possessing unusual merit.

Messrs. BLACKMORE & LANGDON, Twerton-on-Avon, obtained Awards for tuberous-rooted Begonias Florence Nightingale (a fine white flower), Mrs. Robert Morton, and Golden Shower (rich yellow), James Braid, F. W. Walker, and Princess Louise Victoria. Messrs. CANNELL & SONS, Swanley, received an Award of Merit for Begonia "Decorator," a very distinct variety suitable for cultivation in suspended baskets.



[Photograph by R. A. Malby, F.R.P.S.

FIG. 24.—ARENARIA PURPURASCENS IN A SWISS ALPINE GARDEN.

Messrs. KELWAY & SON, Langport, have shown many good novelties in Delphiniums. They obtained Awards at the Royal Horticultural Society's meetings and at the Wisley trials for the varieties Dr. Lodwidge, Drake, Dusky Monarch, Lovely, Mrs. Jas. Kelway, Smoke of War, and Tagalie.

Messrs. FORBES, LTD., Hawick, received Awards for Delphiniums Col. Crabbe, J. S Sargent, Mme. E. Gerry, Royal Standard, and Dr. Bergmann; Messrs. GEO. BUNYARD & Co. for Delphinium Cymbeline, Darius, Jessica and Lorenzo; Messrs. BLACKMORE & LANGDON for Delphinium Harry Smeatham; and Mr. G FERGUSON for Delphinium Lavande

For Sweet Peas Messrs. DOBBIE & Co. received Awards for quite a large number of good novelties, including Dobbie's Scarlet, Brunette, Isobel Malcolm, Lavender George Herbert, Mrs. Cuthbertson, Tennant Spencer, Thomas Stevenson, and Decorator. The variety named last was also well shown by Messrs. G. STARK & SON, Great Ryburgh, who also received Awards for Hercules and Premier. Mr. A. MALCOLM, Mr. DEAL, Mr. R. BOLTON, Messrs. A. DICKSON & SON, and others contributed choice novelties to the various shows.

MISCELLANEOUS NOVELTIES.

Leptospermum scoparium Nichollii, with which the Rev. A. T. BOSCAWEN won the cup offered by the *Gardeners' Chronicle* at the Royal International Horticultural Exhibition, forms a charming bush of rose-pink flowers, its companion variety Boscawenii being also very pretty.

Water Lilies are now great features in many gardens, and especially with Mr. Leopold de Rothschild at Gunnersbury House (gr. Mr. J. Hudson). The best novelties of 1912 were Nymphæa formosa, a pink flower, 8 inches in diameter, with yellow centre; and N. Attraction, deep crimson. Mr. DE ROTHSCHILD received Awards of Merit for both varieties.

Montbretia "Star of the East," for which Mr. DAVIDSON, Westwick Gardens, Norwich, received a First-class Certificate on August 13, is far and away the best variety of Montbretia ever raised.

The new varieties of Papaver orientale, shown by Mr. AMOS PERRY are showy objects, and Achillea Perry's white is a useful, hardy border plant.

Calceolaria Veitchii, of Messrs. ROBERT VEITCH & SON, is a good addition to their useful strain of Calceolarias; Iris variegata Ossian and I. squalens var. Nibelungen, of Messrs. BARR & SONS, are excellent varieties in a very favourite class; and Messrs. WALLACE & Co., Colchester, and others have some good novelties to their credit.

The following new and noteworthy plants, shrubs and fruits were illustrated in the *Gardeners' Chronicle* in 1912:—

Achillea Kellereri, April 20, p. 252.
Achillea Ptarmica Perry's White, September 21, p. 234.
Adiantum cuneatum var. micropinnulum, October 12, p. 289.
Æsculus chinensis, November 9, pp. 346-7.
Æthionema amœnum, September 7, p. 199.
Aloe Bainesii, June 29, p. 425.
Aloe dichotoma, June 29, p. 424.
Alocasia Micholitzana (Supp.), May 25, p. xvi.
Amaryllis procera, July 27, p. 73.
Androcymbium melanthoides, January 6, p. 13.
Androsace Henryi, May 25, p. 354.
Anthemis cupaniana, February 24, p. 117.
Apple Crawley Beauty, December 21, p. 474.
Apple Padnall Seedling, November 30, p. 413.
Asparagus Lutzii, December 7, p. 427.
Astilbe Avalanche, July 6, p. 11.
Astilbe simplicifolia, August 3, p. 101.
Begonia Decorator, August 10, p. 124.
Begonia Clibran's Pink, December 28, p. 492.
Begonia Florence Nightingale, August 3, p. 95.
Begonia Lucy Clibran, November 23, p. 387.
Begonia luxurians, January 13, p. 28.
Begonia splendour, November 23, p. 392.
Bowkeria Gerardiana, August 17, p. 140.
Buxus Henryi, December 7, p. 423.
Calceolaria Veitchii (Supp.), June 1, p. xxii.
Calceolaria virgata, January 27, p. 50.
Camellia cuspidata, April 20, p. 261.
Campanula cenisia, July 20, p. 43.
Campanula Petræa, August 17, p. 132.
Campanula speciosa, August 24, p. 159.
Carnation Baroness de Brienen, April 20, p. 254.
Carnation Benora, October 19, p. 297.
Carnation John Ridd, July 13, p. 25.
Carnation Mrs. A. F. Dutton, April 13, p. 244, and December 7, p. 433.
Carnation Rosette, October 5, p. 267.
Carnation Salmon Enchantress, November 23, p. 393.
Cassia corymbosa, August 17, p. 138.
Ceratolobus Forgetiana (Supp.), May 25, p. xv.
Cherry Governor Wood (Supp.), June 1, p. xxviii.
Chrysanthemum Celia, October 19, p. 305.
Chrysanthemum Mrs. Swinburne, December 14, p. 443.
Chrysanthemum Queen Mary, November 16, p. 367.
Citrus japonica fructu ellipticus (Supp.), June 1, p. xxxi.
Citrus hardy Japanese, March 16, p. 171.
Clematis Jouiniana, January 20, p. 34.
Clematis Mrs. Henry Wood, June 22, p. 415.
Colchicum autumnale double white variety, August 24, p. 152.
Colchicum Bornmuelleri, August 24, p. 157.
Colchicum speciosum, white variety, August 24, p. 153.
Cotoneaster amœna, January 6, p. 2.
Crinum Powellii, outdoors, August 3, p. 98.
Cupressus formosensis, March 2, pp. 132-3.
Cynoglossum cœruleum, December 14, p. 444.
Cytisus Dallimorei, March 30, p. 198.
Dahlia Diadem, May 4, p. 296.
Dahlia Holyrood, May 4, p. 297.
Daphne Thauma, July 13, p. 22.
Deutzia longifolia, June 22, p. 409.
Deutzia myriantha, July 20, p. 45.
Deutzia Veitchii (Supp.), June 1, p. xix.
Dimorphotheca Ecklonis, August 31, p. 169.
Dioscorea bulbifera, October 26, p. 313.
Echinocactus myriostigma, September 21, p. 229.
Echium candicans, June 1, p. 368.
Echium Wildpretii (Coloured Supp.), October 26.
Edraianthus serpyllifolius, July 20, p. 53.
Elæocarpus cyaneus, June 15, p. 393.
Elliottia racemosa, January 6, p. 11.
Elsholtzia Stauntonii, January 13, p. 21.
Eschscholtzia cæspitosa, April 27, p. 275.
Eriobotrya japonica fruiting, October 26, p. 319.
Eugenia pusilla, September 7, p. 192.
Eugenia Simii, August 31, p. 179.
Fabiana imbricata, September 14, p. 210.
Gaultheria oppositifolia, August 10, p. 109.
Halesia tetraptera (Supp.), February 3.
Hamamelis mollis fruiting, December 28, p. 488.
Helenium, proliferous, September 21, p. 240.
Helianthemum showing pollen tubes, December 14, p. 457.
Hoheria populnea, November 9, p. 355.
Hippeastrum procerum (Coloured Supp.), July 27.
Iris bracteata, November 2, p. 338.
Iris Kæmpferi at Yokohama, December 21, p. 476.
Iris squalens var. Nibelungen (Supp.), June 1, p. xx.
Iris reticulata, November 2, p. 339.
Kniphofia John Benary, September 28, p. 252.
Lardizabala biternata, December 21, p. 467.
Lastrea patens var. Mayi, June 15, p. 386.
Leptospermum bullatum, February 17, p. 100.
Lewisia Howellii, May 25, p. 349.
Lilium davuricum var. luteum (Supp.), June 1, p. xxi.
Lilium myriophyllum, April 27, p. 273.
Lilium sulphureum, January 13, p. 19.
Lobelia Tupa, September 28, p. 243.
Malvastrum campanulatum, September 7, p. 193.
Magnolia salicifolia, April 6, p. 223.
Momordica Charantia (Coloured Supp.), December 21.
Moræa sinensis, January 20, p. 37.
Mussænda Sanderiana, September 21, p. 228.
Narcissus Crœsus (Coloured Supp.), May 18.
Narcissus Mrs. E. H. Krelage, May 4, p. 294.
Narcissus Œnone, May 4, p. 295.
Nannorrhops Ritchieana, February 3, p. 66.
Nelumbium presented to Queen Mary, August 10, p. 117.
Nelumbium speciosum at Kew, August 10, p. 119.
Onosma helveticum, October 12, p. 280.
Onosma sericeum, October 12, p. 281.
Onosma tauricum, April 27, p. 274.
Oranges in Italy, December 21, pp. 461-2.
Oxalis enneaphylla var. rosea (Supp.), June 1, p. xxv.
Patrinia triloba, July 20, p. 55.
Pear Mrs. Seden, January 20, p. 35.
Pear Souvenir du Congrès, March 30, p. 199.
Petrea volubilis, April 27, p. 287.
Philadelphus microphyllus, April 6, p. 225.
Philadelphus virginal, July 20, p. 47.
Plum Early Transparent Gage (Supp.), June 1, p. xxx.
Podocarpus formosensis, October 19, p. 295.
Polypodium Mandaianum, July 13, p. 24.
Polypodium Vidgenii, June 15, p. 387.
Pontederia cordata, December 21, p. 466.
Polygonum campanulatum, December 28, p. 489.
Primula Forrestii (Supp.), April 13.
Primula Forsteri, December 28, p. 490.
Primula integrifolia, October 5, p. 258.
Primula Knuthiana (Coloured Supp.), June 1.
Primula malacoides, October 19, p. 308.
Primula Juliæ, May 4, p. 293.
Primula sinensis White Queen Star, September 7, p. 188.
Primula sinensis White Queen Star "Giant variety," September 7, p. 189.
Primula suffrutescens, September 21, p. 226.
Primula uniflora, June 22, p. 407.
Primulas vincæflora and pinnatifida (Supp.), May 11.
Primula Wattii, April 27, p. 286.
Primula secundiflora (Supp.), April 27.
Prunus Miqueliana, December 7, p. 432.
Prunus nana rubra (Coloured Supp.), November 23.
Rehmannia Kewensis, April 6, p. 218.
Rhododendron Aucklandii ♂, June 1, p. 361.
Rhododendron Augustinii, July 6, p. 4.
Rhododendron Broughtonii aureum, January 27, p. 53.
Rhododendron chartophyllum, May 4, p. 291.
Rhododendron Loderi, June 1, p. 360.
Rhododendron Vaseyi, May 11, p. 313
Rhododendron Victorianum, June 22, p. 406.
Rosa gigantea, May 11, p. 314.
Rose Bennett's Seedling, July 27, p. 64.
Rose Blush Rambler (Supp.), September 21.
Rose Edward Bohane, October 5, p. 272.
Rose Irish Elegance, February 24, p. 121.
Rose Mme. Edouard Herriot (Supp.), June 8, p. xxxv.
Rose Mrs. C. E. Pearson, September 21, p. 238.
Rose Mrs. Chas. S. Hunting, July 6, p. 16.
Rose Mrs. MacKellar, September 27, p. 253.
Ranunculus Lyallii (Supp.), June 29.
Rubus bambusarum, March 9, p. 148.
Rubus biflorus quinqueflorus, March 9, p. 149.
Rubus chroösepalus, March 16, p. 166.
Rubus corchorifolius, March 9, p. 149.
Rubus coreanus, March 9, p. 149.
Rubus Lambertianus, March 16, p. 166.
Rubus lasiostylus, March 16, p. 167.
Rubus omeiensis, March 9, p. 149.
Rubus Parkeri, March 16, p. 166.
Rubus Playfairii, March 16, pp. 165-3.
Rubus Swinhoii, March 16, p. 166.
Rubus thibetanus, March 9, p. 149.
Saussurea gossypiphora, February 10, p. 85.
Saussurea leucoma (Supp.), February 10.
Scolopendrium vulgare crispum nobile, November 2, p. 335.
Saxifraga longifolia, September 27, p. 244.
Saxifraga cochlearis, March 16, p. 174.
Saxifraga hybrida, June 1, p. 367.
Saxifraga kewensis, April 13, p. 247.
Saxifraga rotundifolia, April 20, p. 253.
Schizocodon soldanelloides, May 25, p. 348.
Silene Hookeri, July 20, p. 44.
Sinomenium diversifolium, November 30, p. 411
Strawberry King George V (Supp.), June 1, p. xxvii.
Strobilanthes Kunthianus (Supp.), January 20.
Sweet Pea Dobbie's True Lavender (Supp.), June 8, p. xxxviii.
Sweet Pea May Campbell (Supp.), August 31.
Sweet Pea Melba (Supp.), June 1, p. xxiii.
Sweet Pea Mrs. Wm. King, August 10, p. 122.
Tulipa dasystemon, September 14, p. 206.
Tulipa Kaufmanniana, April 6, p. 217.
Tydæa amabilis, August 17, p. 134.
Typhonodendron Lindleyanum (Supp.), September 7.

FOREIGN CORRESPONDENCE.

THE HALF HOLIDAY.

IN 1909 I left England to go to France; I had been used to working in England (winter hours) from 7 a.m. to 5 p.m., getting half-an-hour for breakfast and one hour for dinner, making 8½ hours daily, except Saturdays, when we worked till 4.30. I spent two weeks holiday at home, and then proceeded to France. Work began at 5 a.m., at 8 we were allowed 15 minutes for breakfast, then at 12 was the midday meal, for which we had two hours, another 15 minutes at 4 o'clock for an early tea and then finished at 7 p.m., when we had a meal equivalent to an English supper, thus making a total of 11½ hours daily with no half or quarter day free even on Saturdays.

Well, I managed to exist the first two weeks, "get through" the next two, and then seemed to get used to it; but, naturally, having no half-day on Saturday, all sight-seeing had to be done on Sundays, and, consequently, I was tired on Monday, and the first four months were not exactly enjoyable.

Now a few words in favour of coming to the Continent, for if English gardeners read what I have said already they will be inclined to make up their minds to stay in England. To any who may have thought of coming out, I would say come by all means, for although some things are not always quite in the old style, one can soon get used to them and learn many new, good and practical ways of working.

Other nationalities have their good qualities just as Englishmen have; we must not expect them to behave, work and think as we do, but on the contrary adapt ourselves to their ways, for they, in their home, cannot adapt ours. I have known Englishmen, after a few weeks, go back home, simply because the people did not please them! But I should like to see a few more of you on this side of the Channel (for our numbers are very small): but do not forget you must learn the ways of the people you have to live amongst, then you will be able to say "Why, the experience is not half so bad as I thought." I have now been on this side of the Channel four years, and sorry to say in a few months must go back to the "Old Country."

When I say au revoir to the Continent, I shall reflect that although in some places it has been a little difficult, I have had, in general, a sunny time, both in France and later in Germany, and my recollections will be happy.
C. H. A. (An English Gardener in Germany).

IRIS CAROLINIANA.

FROM the notice in *Gardeners' Chronicle*, November 30, p. 412, I learned with pleasure that Iris caroliniana has been described in the *Botanical Magazine*. I discovered this beautiful and rare plant in the year 1889 when I was curator of the Botanical Gardens, Harvard College, Cambridge, Massachusetts.

I made a short trip to Wilmington, N.C., principally to gather Dionæa muscipula. When I discovered the Iris it was a surprise to Dr. Watson and Dr. Asa Gray that a new species was found in a locality visited so frequently by botanists in search of Venus' Fly Trap.

Both of these plants grew within a few miles of Wilmington, N.C. While the Iris is horticulturally distinct, it is especially interesting from a botanical point of view, especially in the seed capsule which Professor Watson states is distinct from that of any other known species of Iris.
W. A. Manda, Landscape Architect, South Orange, N.J.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

THE CORSICAN PINE (see pp. 462, vol. lii, and 28).—Although I am unable to enter into the discussion as to the merit of Pinus Laricio timber, since none of our old trees here has as yet been cut down, I can testify to the fine way that they are growing in this part of the Severn valley, far surpassing in height and girth the Scots Pine planted close to them and at the same time. They also withstand the wind better. Thus, in the gale of March 24, 1895, we lost many Scots but no Corsican Pine. Again, after the severe snowfall of January 17 and 18, 1912, when about 18 inches were registered, falling in the form of fine powder, with no wind, 18 more trees of the Scots Pine suffered terribly from the weight of the snow, the ground underneath them being strewn with branches, whereas only two boughs came off our nine old Corsicans, and those from the variety Pallasiana, which would naturally suffer more with its enormous side limbs. Judging from a mixed wood in this valley, planted in 1906, they are also unhurt by late spring frosts; we had 10° Fahr. on April 11, 1912, and the European and Japanese Larch were in full leaf and badly frosted. The Corsicans withstood the 1911 drought, growing as well that year as in others, when a few Japanese Larch died and the European made very poor growth. I give the measurements of some of the old trees here, in case they may be of interest; though I cannot give their exact age, it must be between 75 and 90 years. The numbers refer to Hortus Arleyensis, Nos. 28 and 111 being the variety Pallasiana, judging from their habit of growth, though they do not seem to vary otherwise:—

No. 19.

Date.	Height feet.	Girth. feet. inches.
1903 ...	... 95	7 3
1909 ...	... 97	7 3½
1912* ...	... 97	7 6

* Leader gone.

No. 28.

1903 ...	... —	10 8
1909 ...	... 102	11 1
1912 ...	... 107	11 4

No. 96.

1903 ...	... —	8 1
1909 ...	... 109	8 4
1912 ...	... 113	8 6

No. 111.

1903 ...	... 108	9 8
1909 ...	... 111	9 9
1912 ...	... 112	10 0

No. 196.

1903 ...	... —	7 9
1909 ...	... 99	7 10
1912 ...	... 106	8 0

—*Robert Woodward, Junr., Arley Castle, Bewdley.*

———The statement as to the value of the timber of this tree, which Sir Herbert Maxwell attributes to me, is really that of Dr. Henry, whose initials are, as usual, attached (on p. 415 of the *Trees of Great Britain*, where the statement appears) to all his separate work. Dr. Henry visited Corsica especially to study this tree in its native forest, and I think it is only fair to quote the whole of the paragraph:—"The timber of young trees is valueless in Corsica, as it contains practically only sapwood, which rapidly decays on exposure to the air. The sapwood is white in colour and always considerable in thickness, varying on an average from 8 inches in young trees (77 years old) to 2 or 3 inches in old trees (250 years old and upwards). The heartwood, which is reddish brown, only develops in quantity when the trees attain an advanced age, exceptionally at 120 to 150 years, usually at 300 years. At the latter age the trees average 3 feet in diameter, and are considered to be mature and at the most profitable age for felling." If this proves to be the case in Great Britain, it is quite clear that the tree can never be profitable to plant, because, even if it could be raised and established as cheaply as Scots Pine (which is not the case), it must cost far more than it will ever be worth. In my experience, there is no tree at present looked on as a forest tree in this country which is so costly to raise and transplant as Corsican Pine. The seedlings grow much more slowly at first than Scots Pine, and the loss in transplanting is enormous, and on my land it requires at least five or six years in the nursery before the trees are large enough to put out permanently; so that I estimate the cost of establishing a pure plantation of Corsican Pine at not less (and often more) than £10 an acre. In the south of England and on sandy land free from lime, no doubt, it could be done for much less, but if Mr. Molyneux asks me to name a tree that will answer the same purpose, and objects to Scots Pine, I suggest that he should try the Giant Thuya, of which I have written in *Trees of Great Britain*, p. 187, Note 1:—"I have recently been shown by Mr. Molyneux a plantation of Thuya gigantea and Larch called Mayshill, made by him in 1888 on poor, heavy Wheat land, overlying chalk, at Swanmore Park, Hants. Here the Thuyas have completely outgrown the Larch, and in many cases suppressed them, and are 15-20 feet high and quite healthy, whereas, where the Larch were planted alone in the same place, they are diseased and sickly." And on p. 188 of the same volume I have quoted the late Mr. Leach, then head gardener to the Duke of Northumberland, at Albany, in Surrey, who, in *Gardeners' Chronicle*, January 30, 1892, is quoted as saying:—"If I had 1000 acres to plant with trees that would give the most remunerative return in a given time, the above would be my mainstay." Time only will show what trees are the most profitable if any profit is to be allowed to those who are trying to improve the country; but it seems to me at present that no tree can be profitable which requires over 60-70 years to produce good timber. *H. J. Elwes, Colesborne, January 11.*

GRAPE MADRESFIELD COURT (see page 454, vol. lii).—Mr. Crump states that the berries of Madresfield Court Grape split at their second swelling, owing to wrong atmospheric conditions. May I ask for the amateur what should be the atmospheric condition at the time of the second swelling? I have grown Madresfield Court under the direction of the late Mr. Stevens at Trentham, where two houses were devoted entirely to the variety, but we could not keep them from splitting badly, although every means were tried, even to covering the outside borders with shutters, after the berries were thinned. Of late years I have grown the Grape in less favourable conditions with great success, among Black Hamburgh and Foster's Seedling, and the berries have never split. I have seen Mr. Crump's vines, and know how well he grows them, but I put it down as the atmospheric conditions which are influenced by the nearness of the Malvern Hills, the natural soil, and good management. At exhibitions one sees fine bunches of Madresfield Court, proving that some growers know how to treat the variety, and it would interest the amateur grower to know how it is done. *Morgan.*

———*Morgan* criticises my remarks on the cracking of the berries of Madresfield Court Grapes, and asks for further information for the amateur grower. In the first place, our vines do not derive any special advantages from the neighbouring Malvern Hills, or any other climatic or local conditions. The whole gist of the matter is the atmospheric influence on the berries brought about by the proper or improper management of the interior of the vineries during the process of colouring and stoning; in other words, the right or wrong use of the ventilating and heating appliances. When the berries begin to show signs of changing colour, from green to black, they will crack if the vinery is shut closely at night, with no artificial warmth in the pipes, as these conditions produce a low temperature and a damp, stagnant atmosphere. Especially if you allow the top ventilators to remain closed until the sun has shone on the vinery for a few hours, or, as is so often advised, "until the inside temperature has reached 60° or 65°." To prevent cracking as soon as the first signs of colouring are observed in the berries, never by night or day quite close the top ventilators, but regulate the warmth of the vinery according to the outside temperature, and always maintain a gentle circulation of warmth in the water pipes in the daytime, varying according to the amount of sunshine At night, and on dull days, maintain a fresh, light, gently-moving atmosphere. If this treatment is carried out, not a single berry will split in the entire crop. Thermometers in this case are somewhat misleading, and it is quite unsafe to give hard-and-fast rules regarding the temperatures to be maintained for Madresfield Court Grapes ripening in mid-season, so as, on the one hand, to avoid cracking, and yet, on the other hand, produce a jet black colour in the berries. But the cultivator should admit, night and day, more or less fresh air through the top ventilators in accordance with the warmth of the vinery. The expert grower who requires extra-large berries may vary this treatment, and have the vineries closed for a few hours on sunny afternoons, to produce vapour, which helps to swell the berries. The top ventilators should be opened again towards nightfall, maintaining the necessary degree of warmth by means of the water pipes. *W. Crump, Madresfield Court.*

ACACIA DEALBATA AT BRANKSOME HALL.—A tree of Acacia dealbata is flowering in the winter garden here. The plant is a very large specimen. It was raised from a root cutting some 25 years ago, and at present fills a space some 70 feet in length and 20 feet in width. The main stem of the tree is 26 inches in circumference, and the flowers at the time of writing form a picture of floral beauty. The gardens are open to the public to inspect the tree and other interesting plants. *Charles H. Harris, Branksome Hall, Darlington, Durham.*

RIPENED WOOD.—I agree with the remarks o Mr. Small (p. 488, vol. lii) regarding the ripening of wood. This summer many Apples and Pears were of indifferent size and quality, and although these defects may be attributed to some extent to the wet, sunless season, I cannot help thinking that they were caused mostly by the excessive heat and lack of moisture in the summer of 1911. In that year there was very little rain until the leaves had fallen, and at the end of October the soil in these gardens was perfectly dry at a depth of 18 inches. As a consequence most of the wood was over-ripened in 1911, and the fruit-buds formed prematurely. If Peach trees under glass were allowed to become so dry at the roots most, if not all, of the buds would drop. In most large soils I question whether the trees would be benefited unless a heavy mulch were applied to retain the moisture. The soil here is a light loam of good depth, exceptionally well drained, and overlying loose, iron-stone rock. *E. R. Janes, Wroxton Abbey Gardens, Banbury, Oxfordshire.*

SCOTLAND.

SEED-TESTING STATION AT EDINBURGH.

THE Secretary for Scotland has recently announced that steps are to be taken for the establishment of an experimental and seed-testing station at Edinburgh. Representations have been made by seedsmen and farmers for the establishment of this seed-testing station, and considerable gratification is felt that they have at length been successful.

GIFT TO A SELKIRK PUBLIC PARK.

AN anonymous donor has offered the Town Council of Selkirk the sum of £100 to provide one or more shelters in Pringle Park.

WEST OF SCOTLAND AGRICULTURAL COLLEGE, GLASGOW.

THE extension in Blythswood Square, Glasgow, has just been completed, and provision has been made for the botanical and allied departments. *Correspondent.*

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

JANUARY 7.—*Present:* Mr. E. A. Bowles, M.A., F.E.S. (in the Chair); Messrs. J. O'Brien, G. Wilson, R. Hooper Pearson, E. M. Holmes, W. Hales, A. Worsley, and F. J. Chittenden (hon. sec.).

Adioda × "*St. Fuscien.*"—Messrs. CHARLESWORTH & Co., Haywards Heath, sent a hybrid between Ada aurantiaca and Cochlioda Noezliana with narrow-petalled flowers of a deep red colour on a many-flowered raceme. This cross was first shown at the International Horticultural Exhibition at Chelsea by Mons. GRAIRE, and it had been raised by Messrs. CHARLESWORTH simultaneously. The Committee unanimously recommended that Certificates of Appreciation should be awarded to both M. GRAIRE and Messrs. CHARLESWORTH & Co.

Cycnoches Cooperi.—Messrs. SANDER showed a plant under this name which was thought by some to be identical with C. pentadactylon, but Mr. Rolfe reports that, though very similar in structure to that species, it is quite different in colour, the sepals and petals being of a nearly uniform mahogany-brown, and there are also some differences in the details of the lip. It would therefore appear to be sufficiently distinct to warrant a new name, and the Award of Merit recommended, subject to the name being found correct, therefore stands.

Epidendrum ciliare × *Lælia cinnabarina.*—Mr. J. O'BRIEN showed flowers of a hybrid between these two plants, pointing out that, though not very conspicuous, the markings on the lip followed the remarkable fringing of the Epidendrum parent and the form of the lip was markedly elongated.

Miltonia vexillaria × *Odontoglossum crispum.*—At the corresponding meeting last year M. FIRMIN LAMBEAU showed a seedling of this cross, and the Committee requested that further plants of the same raising should be shown when the opportunity occurred. M. LAMBEAU now sent two more plants bearing flowers very similar in appearance, and leaving no doubt that the parentage stated originally was correct.

Datura arborea.—Mr. HOLMES showed a flower of D. arborea bearing a white outgrowth from the outside of the corolla similar to those which occur frequently in Gloxinias and other plants.

Insect attacking Fennel.—Mr. HOLMES also showed a number of insects belonging to the genus Typhlocyba (leaf-hoppers). Few insects attack the Fennel, possibly owing to the oil it contains.

Grouse eating Willow buds.—Mr. F. M. OGILVIE, of the Shrubbery, Oxford, sent shoots of a Willow on which he had seen grouse feeding in Argyllshire. The crop of the grouse was full of the buds. The Willow appeared to be Salix repens, an apparently uncommon food plant for grouse in Britain.

Cyclamen with branching inflorescence.—Mr. HAWKES, of Osterley Park Gardens, sent shoots of Cyclamen bearing leaves springing from the peduncles, and in their axils other flowers. These branching peduncles of Cyclamen appear not uncommon in collections where the plants are growing with unusual vigour.

Gall on root of Thuya.—A large globular growth the size of a cricket ball was shown on the root of a Thuya. It was very similar in appearance and structure to those not uncommon on the roots of Loganberries and other plants, and was possibly allied to the crown-gall which attacks so many widely-different plants.

SCOTTISH HORTICULTURAL.

THE statement of accounts furnished to the members of the Scottish Horticultural Association in connection with the annual meeting states that the Chrysanthemum Show resulted in a profit balance of £22 18s. 9d. The abstract of the association accounts show that the funds, which were £754 1s. 9d. at the end of 1911, were, after allowing £30 14s. 1d. for depreciation of stocks, £859 19s. 5d. at the corresponding date in 1902. The Horticultural Institution Fund, which amounted to £80 10s. 6d. at the end of 1911, is now £288 2s. 5d., whilst the Benevolent Fund amounts to £26 1s.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

JANUARY 2.—*Committee present:* Rev. J. Crombleholme (in the Chair); Messrs. R. Ashworth, J. Cypher, A. Hanmer, F. A. Hindley, D. McLeod, C. Parker, H Thorp, Z. A. Ward, A. Warburton, and H. Arthur (secretary).

Large Silver Medals to Z. A. WARD, Esq., Northenden (gr. Mr. Weatherby), for a group containing some fine Odontoglossums; R. ASHWORTH, Esq., Newchurch (gr. Mr. Gilden), for a mixed group; A. WARBURTON, Esq., Haslingden (gr. Mr. Dalgleish), for a good group; Col. J. RUTHERFORD, M.P., Blackburn (gr. Mr. Lupton), for a miscellaneous group of Odontoglossums; and Messrs. J. CYPHER & SONS, Cheltenham, for a splendid group of Cypripediums.

Silver Medal to F. A. HINDLEY, Esq., Bradford.

Bronze Medals to Rev. J. CROMBLEHOLME, Clayton-le-Moors (gr. Mr. Marshall), for a small group of Cypripediums; and H. ARTHUR, Esq., Blackburn.

Other exhibitors included J. J. HOLDEN, Esq., Southport (gr. Mr. Johnson); W. R. LEE, Esq., Heywood (gr. Mr. Branch); Messrs. STUART LOW & Co., Enfield; and Messrs. A. J. KEELING & SONS, Bradford.

AWARDS.

FIRST-CLASS CERTIFICATES.

Odontoglossum × *J. Whitmoyer*, a large, spotted flower of the amabile type, from Z. A. WARD, Esq.

Cypripedium Lady Dillon magnificum (Nitens "Ball's" var. × Mrs. Mostyn), from W. R. LEE, Esq.

AWARDS OF MERIT.

Cypripedium Mrs. F. Sander (Eve × insigne Sanderæ), from J. J. HOLDEN, Esq.

Cypripedium Rossendale, parentage unknown, from R. ASHWORTH, Esq.

Vanda Amesiana albens, from Messrs. STUART Low & Co.

Oncidium crispum var. "*The Knowle,*" and *Gomezia Barkeri*, both from Messrs. A. J. KEELING & SONS.

AWARDS OF APPRECIATION.

Lycaste Skinneri var. "*Her Majesty,*" from J. J. HOLDEN, Esq.

Cypripedium insigne var. "*International,*" from H. ARTHUR, Esq.

CULTURAL CERTIFICATE

To Mr. DALGLEISH for extra fine plants of Cypripedium Leeanum giganteum and C. L. nobilior.

HORTICULTURAL CLUB.

TRAVELS IN BULGARIA.

JANUARY 7.—On this date, after the usual monthly dinner, presided over by Mr. W. A. Bilney, Mr. Herbert Cowley gave a very interesting lecture, illustrated by lantern slides prepared from original photographs and entitled "My Travels in Bulgaria." The company numbered 33. Mr. Cowley's visit was made before the outbreak of the present war, but he referred to the complicated "tangle," as he termed it, presented by the Balkan States, owing to the contempt and dislike entertained by the various nationalities for each other, which, of course, is not by any means ameliorated by the influence of the Turkish domination, now presumably thrown off by the recent outbreak.

Apart, however, from the political associations, the country is very interesting from the botanical and horticultural points of view, a range of fairly lofty mountains reaching altitudes of 12,000 feet or more, providing habitats for a very varied flora and material for some very fine photographs of Alpine and other plants in situ, and the presentation of these pictures evoked much admiration. More particularly, the fact that Bulgaria is so much the home of the Rose that it is the source of that valuable essence known as "attar of Roses" rendered the photographs of special interest. Inasmuch as about 100,000 blooms have to be gathered to produce an ounce of attar, it is clear that the high value of the latter is fully justified. Photographs of natives and native priests and also of their towns and villages, and the lecturer's remarks showed that cleanliness is not an article in the popular creed, while the "roads" were entirely unpaved even in the towns.

Poverty seemed the rule everywhere, the dwellings in the country villages being of the most ramshackle kind. The King of Bulgaria is an ardent horticulturist, and he gave Mr. Cowley's party every facility and a guide, thus securing them a hospitable reception even in out-of-the-way places.

PERPETUAL-FLOWERING CARNATION.

JANUARY 6.—On this date the Floral Committee made the award of a First-class Certificate to Carnation Mary Allwood. The First-class Certificate is not granted unless a variety has been shown and given an Award of Merit previously; and at least 85 points must be obtained to secure the higher award.

ROYAL CALEDONIAN HORTICULTURAL.

JANUARY 8.—The annual general meeting of the above society was held in Dowell's Rooms, George Street, Edinburgh, on this date. Mr. D. W. Thomson, the senior vice-president, was in the chair, and there was an attendance of 30.

The report for 1912 stated that, notwithstanding the bad season, both the spring and autumn shows had been satisfactory as regards entries, the latter being the best autumn display since the International Exhibition of 1905. The abstract of the accounts showed a small balance of income over expenditure, and it was mentioned that it was gratifying to observe that the public was giving the shows more patronage, the exhibition receipts for the past year being £45 more than in the previous year. The report was adopted on the motion of Mr. J. W. McHattie.

Mr. J. Stewart Clark, of Dundas, was re-elected president, and Mr. J. D. Adair vice-president. Vacancies on the council were filled by the election of Messrs. Kidd, Carberry Towers; Methuen, Edinburgh; and Plant, Edinburgh.

GLASGOW FRUIT TRADE BENEVOLENT.

JANUARY 13.—The annual meeting of this society was held in Glasgow on this date, the chair being occupied by Mr. Malcolm Campbell. The report of the secretary showed that the membership has increased largely during the past year. At the end of 1911 the members numbered 107, and at the close of 1912, 158. The report of the treasurer was of an equally satisfactory character. At the beginning of 1912 the funds amounted to £780; they increased to £1,012 at the end of the year, the net increase being £231. The reports were adopted, and the office-bearers elected.

LAW NOTE.

UNDEVELOPED LAND DUTY.

AT the Surveyors' Institution on Monday last, Mr. Howard Martin, P.P.S.I., acted as referee in the matter of Messrs. Jackman & Co. v. the Commissioners of Inland Revenue.

Mr. Wm. Allen, barrister, represented the claimant firm, whilst Mr. J. H. Shaw appeared for the Inland Revenue authorities.

In opening the case, counsel for Messrs. Jackman said his clients were instituting those proceedings by way of appeal against an assessment in regard to undeveloped land duty, charged in respect of certain nursery grounds situated at Woking, Surrey, where Messrs. Jackman carried on a very large business. The Commissioners only proposed to allow 4 acres as developed land, upon which had been erected sheds and greenhouses, out of a total of 180 acres. His contention was that the area was insufficient, and they therefore appealed against the assessment. Some of the land was freehold and some leasehold, and it was in regard to a portion of the freehold that the appeal arose. It related to two portions having an area of 11 acres 2 roods 22 poles and 7 acres 2 roods 32 poles respectively. They had been allowed 4 acres 7 poles as developed land, but that was insufficient, and he asked that it should be increased. The provisional valuation served on them on August 3, 1912, gave a total value on the first portion of the land of £4,413, with a site value of £4,074, and agricultural value £873, and on the second a site

value of £4,616 and an agricultural value of £577. The figures had been agreed, and nothing arose on them. The total liability for undeveloped land duty was £10 9s. 6d. a year. Notice of appeal was served on 28th August, 1912, and that noticed was amended on January 8 last, when a paragraph was struck out. The first claim was put in by Mr. Jackman without professional advice, and the claim mentioned in the last paragraph was not open to them under the statute, and one or two other amendments had been made in order to make the appeal quite clear. Counsel contended that it had to be determined in each particular case what had been developed by a building for the purposes of a business or trade or industry other than agriculture. Glasshouses and greenhouses were included amongst the buildings that did develop land for the purposes of trade or industry, and he contended that that was a question that would only be determined by evidence in each particular case. Development was not used in the Act for "used for." If that section had been only intended to limit the development of land to that which was actually covered by buildings erected for trade or industry, it would be perfectly easy to express it in two ways: developed when used for the erection of dwelling houses or for the purposes of trade, or land shall be deemed undeveloped when it had not been used for dwelling houses or buildings. What they had to consider there was the meaning of the word develop. Mr. Allen then gave details of how the business was carried on. The firm grew hardy and other shrubs, and when they reached a certain age they were taken out of the greenhouses, and, before they were fit for the market, they were "plunged" into the ground in their pots for a certain period, sometimes amounting to five years. If, therefore, there was no land for them to use with the greenhouses, it would be impossible for them to carry on their business. In the circumstances, considerable land round the greenhouses was taken up, and what they claimed, therefore, was that the land they required for the purpose he had described should be deemed developed land. The area they claimed as developed was 10 acres.

Mr. Shaw said the question to decide was the meaning attached to Section 2 and Section 16, aided by Section 41 of the Act. He submitted that land used for agricultural purposes was liable to undeveloped land duty. Then there was the question of what was meant by development by the erection of glasshouses or greenhouses. The view the Commissioners took was that a liberal and generous interpretation of the section was that if the greenhouse was erected on a certain piece of land, the land around it which was absolutely necessary for the use of the building should be deemed as if there was an erection on it. In that particular case they had allowed an area of land exactly equal to the area of the site of the land with buildings upon it, which they thought was necessary for the use of the building. Counsel then quoted the case of Smith v. Richardson, reported in appeal cases 1899, p. 448, in support of his submission. Continuing, he said that land used for the planting out of the shrubs was land used for purposes of the business, but it was used for agricultural purposes, and there was an exemption in respect of that use. He submitted that the Commissioners had acted on the side of generosity, and the area they had allowed was amply sufficient for the full use of the building.

Mr. Allen briefly replied, and eventually the proceedings terminated, it being intimated that the decision would be made known in a few weeks.

ACTION AGAINST A HORTICULTURAL SOCIETY.

THIS case was reported in the issue for January 27, 1912, p. 63. It concerns an action raised in the Sheriff Court against the Kirkcaldy Horticultural Society by Mr. W. H. Ewen, Lanark, who entered into a contract with the committee to bring an aeroplane to Kirkcaldy to give two exhibition flights, the terms being £50 on bringing the machine to the show ground and £50 on giving the flights. He claimed £50 for the first part of the contract. Sheriff-substitute Umpherston found for the pursuer for £50. The decision was appealed against, and on the 1st inst. the Sheriff principal gave his decision affirming that of the Sheriff-substitute and decerning against the defenders, jointly and severally.

NURSERY NOTES.

THE WINTER PROPAGATION OF ROSES.

THOSE who are not conversant with the methods adopted by Rose growers to increase the stock of any new or rare variety would find a visit to Messrs. S. Bide & Sons, Alma Nursery, Farnham, very interesting. Fifty thousand plants are raised by root-grafting from the end of October until April every season. On the occasion of a visit made during the present winter it was interesting to learn the views of Mr. Kreuse as to the various kinds of stocks employed for the several sections. For the Wichuraiana section the Manetti is preferred; for Tea and Hybrid Teas the seedling Briar is largely used, but in the case of the Polyantha section seedlings obtained from the Multiflora type are preferred. For H.P. varieties, where the soil is stiff, Briar cuttings are employed.

The usual close propagating cases in low houses provided with bottom heat are largely in evidence, but an experiment that bids fair to be successful is being tried in the open under cloches.

The question as to the varieties that are likely to become popular and remain in cultivation demands much thought, otherwise the immense number of novelties introduced from French, American, Irish and English growers might cause the inexperienced to propagate vast numbers of plants that would never meet with a demand.

As showing what is required in one variety alone to keep pace with public requirements, Mr. Bide stated that last year he raised no fewer than 10,000 plants of the Lyon Rose, and even that number was not sufficient.

In the Wichuraiana section, which is rapidly increasing in popularity, I noted huge batches of Aviateur Bleriot, the new yellow variety which is said to be the finest of that colour among ramblers. The crimson Excelsa, the pink Coquina, Dorothy Dennison (which is perhaps the most pleasing of all the Dorothy Perkins sports), and the newer Eisenach, a new climber of much merit. Of the Polyantha section Jessie is perhaps the greater favourite; it gives continuously its deep crimson blossoms until November. Cyclops, Amber, Lustige Wittwe (Merry Widow), and Orleans, a rich Pelargonium-red, are just a few of the newer sorts I noted in this section.

The popular H.T. and Tea sections are naturally widely represented. Some thousands are in course of propagation of such varieties as Lieut. Chauré, a cross between Etoile de France and Liberty, Marquise de Sinety, Lady Pirrie, Viscount Carlow, Lady Hillingdon, Mrs. Foley Hobbs, Entente Cordiale, Miss Alice de Rothschild, Mrs. A. R. Waddell, Mrs. Arthur Munt, Jonkheer J. L. Mock, Château de Clos Vougeot and Arthur Goodwin. *E. Molyneux.*

DEBATING SOCIETIES.

CARDIFF GARDENERS'.—Mr. A. H. Cossom presided at the meeting held on the 7th inst. Mr. H. R. Farmer, of Cardiff Castle Gardens, read a paper on "Greenhouse Annuals." The culture of Schizanthus, Primula, Cineraria, Celosia and Calceolaria were all dealt with by Mr. Farmer. Many gardeners, said Mr. Farmer, make the mistake of potting Cinerarias in too rich soil; feeding being unnecessary until the flower spikes appear. He advised the sowing of Schizanthus and Celosia to be done in August.

WATFORD HORTICULTURAL.—The monthly meeting of this society was held at St. Andrew's Room on the 10th inst. Mr. G. Dyke occupied the chair. The meeting was devoted to discussions of various horticultural problems, and many points were debated by the members. Mr. W. B. Kettle, of St. Andrew's Nurseries, exhibited a group of Cypripediums interspersed with Ferns, and G. B. Dodwell, Esq., "Coniston," Langley Road (gardener, Mr. G. Middleton), a group of Cyclamen.

BRISTOL AND DISTRICT GARDENERS'.—A meeting of the above association was held in St. John's Parish Rooms, Clifton, on the 9th inst. Mr. Thoday presided. Prizes were offered to under gardeners for a fifteen-minutes discussion. In the open competition Mr. Sweeting won the 1st prize for his remarks on the "Herbaceous Border." Mr. Rivers was awarded the 1st prize for a discussion on "Vegetables."

DUMFRIES AND GALLOWAY GARDENERS'.—The first ordinary meeting in 1913 was held in St. George's Hall, Dumfries, on the 11th inst. Mr. Croall occupied the chair. Mr. S. Arnott gave a lecture on "Alpine and Rock Plants," illustrated by a large number of lantern slides.

THE WEATHER.

THE FOLLOWING SUMMARY RECORD of the weather throughout the British Islands, for the week ending January 11, is furnished from the Meteorological Office:—

GENERAL OBSERVATIONS.

The *weather*.—The conditions over these islands were generally unsettled, but over a large part of England the weather was often fair and occasionally fine and bright. On Saturday rain fell heavily over the southern counties, and much snow in the central and northern parts of Great Britain.

The *temperature* continued above the average, the excess being greatest (5·6°) in Scotland N., and least (3·3°) in England N.E. The highest of the maxima were recorded during the earlier half of the week, and ranged from 56° in Scotland E. to 52° in England S.E. and S.W., and Scotland W. The lowest of the minima occurred at most places, either on the 6th or 11th, and varied from 26° in Scotland E. and Ireland S. to 31° in England E. and S.E., and to 41° in the English Channel. The lowest Grass readings were 16° at West Linton, 21° at Dublin, 22° at Newton Rigg and Markree Castle. The temperature of the soil was considerably above the average at the depth of 1 foot and slightly above it at the depth of 4 feet.

The *mean temperature of the sea*.—On most parts of the coast the temperature of the water was higher than during the corresponding week of last year, and in nearly all localities it was above the normal. The mean values ranged from 52° at Seafield and 50° at Scilly and Newquay to 40° at Burnmouth.

The *rainfall* was in excess of the average except in Scotland N., and in most districts the excess was very large. Heavy falls occurred in Ireland on the 9th and 10th, the largest measurements being 1.50 inch at Cahir on the 9th, and 1.52 inch at Dublin on the 10th. More than 1 inch of water was yielded by the snow over England and Scotland on Saturday, the highest figures being 1.32 inch at Lincoln, 1.37 inch at Harrogate, and 1.52 inch at Rauceby. At West Witton, where the snow yielded 1.15 inch of water, its depth was 1 foot, at Rauceby 1 foot to 1 foot 2 inches, and at Crieff, where the amount of water was 1.24 inch, the depth of snow was 1 foot 5½ inches.

The *bright sunshine* was less than the normal in all parts of the Kingdom. In Scotland W. and N. and England N.E. the mean daily amount was less than 0.5 hour.

THE WEATHER IN WEST HERTS.

Week ending January 15, 1913.

The coldest day and night as yet this winter—The uninterrupted spell of unseasonably warm weather, which had lasted for five weeks, was broken during the past week by a cold day on the 11th and a very cold day on the 13th—when the highest temperature in the thermometer screen was 31°, and the lowest temperature on the grass 15°—17° of frost. Both these readings, although the coldest of the present winter as yet, were by no means remarkable, considering that they occurred at what should be the coldest period of the whole year. There have been as yet this winter only six unseasonably cold days, and only five unseasonably cold nights. The ground temperatures have fallen, but are still 2° warmer at 2 feet deep, and 1° warmer at 1 foot deep, than is seasonable. Rain fell on the 11th inst., to the total depth of three-quarters of an inch. This fall lasted from noon till midnight, or for 12 hours. On that day hail, snow, and sleet fell at times with the rain, and during the night of the 14th there was a slight fall of rain. About three gallons of rainwater came through both the percolation gauges during the week. The sun shone on an average for 1 hour 19 minutes a day, which is 16 minutes a day short of the mean duration for the middle of January. Light airs as a rule prevailed, while the direction of those light airs was very variable. For only five hours altogether has the wind come from any northerly point of the compass during the last five weeks, and on no occasion during the present month. The average amount of moisture in the air at 3 o'clock in the afternoon exceeded a seasonable quantity for that hour by 5 per cent.—*E.M., Berkhamsted, January 15, 1913.*

GARDENING APPOINTMENTS.

Mr. H. COOK, for the past 2½ years Gardener to H. J. MONTEFIORE, Esq., Chartridge Grange, Chesham, Buckinghamshire, as Gardener to H. B. BRANDT, Esq., Capenor, Nutfield, Surrey.

Mr. WILLIAM HOCKEY, as Gardener to The Dowager Marchioness of BUTE, The Garrison, Millport, Isle of Cumbrae.

Mr. THOMAS SIDWELL, for more than 7 years Foreman in the gardens at Avon Castle, Ringwood, Hampshire, as Gardener to Count GUROWSKI, Woolhampton Park, Berkshire.

Mr. GEORGE S. MACDONALD, for the past 12 years Gardener at Dromana, Cappoquin, Co. Waterford, as Gardener to Sir RICHARD WALDIE GRIFFITH, Bart., Hendersyde Park, Kelso, Scotland.

Mr. H. SAVILLE, for 4 years Gardener to R. GURNEY, Esq., Earlham Hall, Norwich, as Gardener to W. N. CHAMPION, Esq., Riddlesworth Hall, near Thetford.

Mr. DUNCAN MACGREGOR, for more than 3 years Gardener to the Right Hon. J. PARKER SMITH, Jordanhill, Glasgow, as Gardener to the same gentleman at Linburn, Kirknewton, Mid-Lothian. (Thanks for 1s. for R.G.O.F. box.—EDS.)

Mr. R. WALKINGTON, for the past 4½ years Foreman at Castle Howard Gardens, York, as Gardener to A. H. ILLINGWORTH, Esq., Denton Park, Ben Rhydding, Yorkshire.

Mr. J. GRICE, previously Foreman at Coombe Cottage, Kingston Hill, as Gardener to Colonel MITFORD, Pitshill, Petworth, Sussex. (Thanks for 2s. for R.G.O.F. box.—EDS.)

Mr. F. SORE, Foreman at Davenham Gardens, Malvern, and previously at Chevening Park, as Gardener at Studley Horticultural College, Worcestershire. (Not F. LORD, as printed in the last issue.)

Obituary.

WILLIAM THEOBALD.—We regret to announce the death of Mr. William Theobald, which took place at Hatchford Park, Cobham, on the 1st inst. in his 57th year. Mr. Theobald began his gardening career in the nurseries of Messrs. Standish & Co., Ascot. He was afterwards employed at Messrs. Eastman's, Englefield Green, Easthampstead Park, Chatsworth, and East Cowes Castle. For three years he was foreman at Cambridge Botanic Gardens and for ten years gardener to the late Mr. Goslett, West Hill, Highgate, during which time he cultivated Chrysanthemums very successfully. For the last 23 years he was head gardener and bailiff at Hatchford Park, serving for 15 years in the service of the late Mr. W. M. Chinnery and for eight years with Sir Henry Samuelson, Bart.

AUGUSTE VAN GEERT.—The death is announced of this eminent Belgian nurseryman, one of the oldest in that country. He was formerly president of the Chambre Syndicale d'Horticulture de Belge and one of the administrators of the Royal Agricultural and Botanical Society of Ghent. He was a contemporary of Louis Van Houtte, and a man of great learning and wisdom. Our readers will join with us in offering deepest sympathy to his nephews, Messrs. Charles and Leon Pynaert.

JULES GROLEZ.—We regret to announce the death of M. Jules Grolez, a well-known nurseryman in the north of France. He was one of the founders of the General Horticultural Society of the Nord and a member for a long period of the general committee of the French Rosegrowers' Society. His name will long remain known to us, thanks to the Rose Mme. Jules Grolez, a first-rate Hybrid Tea variety.

ANSWERS TO CORRESPONDENTS.

ARTIFICIAL MANURE FOR MELONS: *T.* If the loam is of good quality there is not much need of manure beyond a little superphosphate, say, a 6-inch potful to each barrow-load of soil. If, when a sufficiency of fruit is set and swelling satisfactorily, the plants exhibit a lack of vigour, apply a little concentrated manure, or place a small quantity of saltpetre in the water applied to the roots, say, ½ ounce to the gallon. The saltpetre may be afforded on two or three occasions before the fruits attain full size.

AZALEAS DISEASED: *P., Chepstow.* The Azaleas are attacked by the Rhododendron gall fungus Exobasidium Rhododendri. In some cases it has been found that, where the galls are removed and burnt before they have developed any colour, the plants are not attacked the next year.

CARPETING PLANTS FOR BEDDING ROSES: *F. H.* The Viola or tufted Pansy is best suited for the purpose, and if they are not planted too closely they will not harm the Roses. Before planting the Violas, fork into the soil some well-rotted manure and spent Hops. As the Violas develop, scatter amongst them a compost consisting of old cow manure, broken very small, leaf-mould or peat, and fibrous loam in equal parts. The Violas will appreciate this dressing, which will act as a mulch for the Roses. Spraying the Violas frequently will also benefit the Roses. Remove the Viola plants every autumn, and dress the beds with bonemeal and rotted manure.

CONSERVATORY: *Constant Reader.* The land on which these adjoining houses are built may be either (a) free from restrictions as to fencing, or (b) subject to such restrictions. In a recently-developed district such as yours the title deeds would almost certainly contain provisions as to the sides of the properties on which the respective purchasers are to fence, and, if so, the description of fence and its maximum height. Inspection of the deeds should therefore show who is responsible for the present trouble. If, however, no one has been made liable to see to the fencing, then we consider that your neighbour must repair any glass he may break and cannot plead the absence of a fence as an excuse. You might, however, meet each other's convenience by dividing the expense of a fence between you.

FORMALDEHYDE AND EELWORM: *H. W.* The soil may be treated in the following manner. Dilute the formaldehyde to a strength of 1 part in 100 parts of water. Spread a layer of soil 3 or 4 inches thick on a hard bottom, and apply the liquid through a rose can, taking care that none of the liquid splashes into the eyes of the operator. Let another workman throw a second layer of soil on the top of the first, wetting it as before until the whole heap is treated. Cover the soil with a tarpaulin or some sacks for a day or two (or longer if convenient), so that the formaldehyde may exert its influence through the entire mass of soil. Afterwards remove the covering, and allow the formaldehyde to evaporate, turning the heap once or twice for this purpose. When the effects of the formalin have all disappeared, which may be determined by the absence of smell, the soil may be used for planting. We understand that commercial formaldehyde may be purchased from the horticultural sundriesman for about 9s. per gallon

MARGUERITES: *J. C. Milton.* The Marguerites are attacked by the leaf-miner. Spray the plants with Quassia extract or any distasteful liquid. Remove all badly-affected leaves and burn them.



THE LATE WILLIAM THEOBALD.

MUSHROOMS: *Anxious.* Your failure with Mushrooms is probably due largely to the door of the house opening into the stokehole. The construction of the shelves is suitable. It is a mistake to remove most of the short litter from the manure; far better err on the side of leaving too much than too little, for the beds will remain in a much sweeter condition if a certain amount of short straw is retained, and will continue in bearing for a longer period. Neither is it wise to add loam to this material. As a rule the beds do not require watering until after they are in bearing, but the house should be damped thoroughly twice daily. Employ as little fire-heat as possible, and if the house dries quickly, as may be expected from its proximity to the stokehole, the beds should be covered with long litter or rough hay after the top soil is placed in position to a depth of about 2 inches, first inserting the spawn. Manure from horses fed on Carrots would be suitable, but do not use dung from animals that have been given much physic. Your spawn is apparently quite suitable. Make up a bed on the ground in any spare shed, preferably one with a northern aspect about double the width you mention and 6 inches deeper.

NAMES OF PLANTS: *C. B.* 1, Libonia floribunda; 2, Lonicera fragrantissima.—*J. P. W.* Chrysanthemum "Framfield Pink" or "Vinter Cheer," varieties which are practically synonymuos.—*C. S. & Co.* Actinotus Helianthi, "Australian Flannel Flower."—*O. R.* 1, Pleurothallis ornata; 2, Bulbophyllum auricomum; 3, Restrepia striata; 4, Brassia Lawrenceana.—*W. R. P.* Hæmanthus albiflos.—*E. B., Surrey.* Ansellia africana, an African Orchid.—*A. B. C.* 1, Begonia Marshalliana; 2, B. Louise Chretien; 3, B. incarnata; 4, B. Van den Hecke; 5, B. splendens; 6, Asparagus (next week).

PEACH BUDS DROPPING: *J. T.* The most frequent cause of bud-dropping in Peaches is imperfect development of the buds. But perfect buds may also drop from improper treatment, such as an insufficiency of water at the roots, during the autumn, or an excess, due to watering such plants as Chrysanthemums in pots on the border, causing sourness of soil. It should be remembered that the trees are never wholly at rest so long as the temperature is above freezing point. Too close an atmosphere and applications of strong insecticides are other causes of bud-dropping. Imperfect development of the buds may be due to improper manipulation of the growths during spring and summer or an unsuitable rooting medium. Soil excessively rich in nitrogenous matter is not suitable, neither is a soil which is light in texture. A medium loam, to which is added a phosphatic manure, such as steamed bone-flour or basic slag, is the most suitable. The soil should also contain lime. When the trees are well furnished with fruits that are swelling satisfactorily, the roots may be fed with a concentrated manure, and a light mulching of animal manure applied if the weather is hot. Young, vigorous trees have been cured of bud-dropping by lifting them and replanting in the early autumn. Disbudding should be done sufficiently early to prevent the development of an excessive amount of growth, which exclude light and air from the future fruiting shoots. Little or no pruning should be required in autumn beyond removing shoots which have not borne fruit, or any not required for furnishing the tree. Such growths should be cut away as soon as the fruits start swelling a second time. Gross shoots should not be allowed to form at any time.

PHOSPHATIC MANURE: *W. C. M.* The label in French does not afford any clue as to the composition of the manure. You should send a sample to someone who undertakes the analysis of soils and manures. If you are a Fellow of the Royal Horticultural Society you are entitled to have samples analysed at a reduced fee by Dr. J. A. Voelcker, 22, Tudor Street, London, the Society's chemist.

PIG MANURE FOR VINE BORDERS: *Trenarno.* Pig manure is suitable for mulching Vine borders. The smell may be lessened by a slight sprinkling of fine soil over the manure. The mulching should never be so thick as to prevent air reaching the border.

POPLAR ROOTS AND FOUNDATIONS OF A HOUSE: *A. C.* In the circumstances described, where a row of Poplar trees has been planted as a screen within 3 feet of a dwelling-house, there is a decided danger of the roots making their way into the foundations of the building and causing damage. We recently observed an instance of the great power exerted by the roots of a Canadian Poplar, which had penetrated the foundations of a well-built brick party wall, disturbing a considerable portion of it. As it is necessary for the trees to remain where they are now growing, a sunken concrete wall, such as you suggest, would effectually prevent the roots doing any damage, and in the marshy soil the loss of a portion of the roots would not be a serious matter, as Poplars are very hardy trees.

POWDERED OYSTER SHELLS: *T. W.* The powdered shells will form a valuable source of lime. They may be mixed with potting soil or used as a dressing in the flower and kitchen gardens. Lime of any kind is especially beneficial to stone fruits, such as Plums, Cherries, and Peaches. Do not employ the material in the Rhododendron beds, or where other Ericaceous plants are growing.

WEEDS IN TURF: *J. W.* Prevent the weeds from seeding by close mowing, and dress the turf with sulphate of ammonia or nitrate of soda mixed with fine soil, preferably discarded potting compost. The rich top-dressing will cause the grass to grow luxuriantly, and in time crowd out the weeds.

Communications Received.—P. F. V., Torquay—F. B.—P., Chepstow—Constant Reader—H. J.—I.W.W., Spain—C. A. B.—P. & Co.—J. P. B.—H. F.—S. F., Chichester—F. G. B.—D. C., Ireland—T. K.—W. H. Y.—O. S.—R. H.—F. K. W.—D. and R.—G. W.—N. E. B.—Rev. J. H.—W. C., Newport.



ANEMONE PULSATILLA ROSEA ("MRS VAN DER ELST")



THE
Gardeners' Chronicle
No. 1,361.—SATURDAY, January 25, 1913.

CONTENTS.

Aconitum Ackermannii ..	53	Perkins, Mr. Henry, retirement of	57
Agriculture, tenth International Congress of ...	53	Pine, the Corsican ...	59
Alpine garden, a Swiss...	52	Rhododendron dauricum	51
Anemone pulsatilla, rose-coloured variety of ...	57	Rhododendrons, variegated	60
Bowling green, the making of a	50	Roses and magnesia ...	59
Carnation propagation ...	59	Scotland, notes from ...	58
Chicorée de Bruxelles ...	58	Societies –	
Colonial note—		Edinburgh Botanical...	62
The genus Mussaenda	59	Gardeners' Royal Benevolent Instit. ...	63
Foreign correspondence -		Linnean	57, 63
Hours of labour in France...	58	Royal Horticultural ...	60
Fruits of the East, the ...	56	Scottish Hort.	62
Fruit wood, ripened ...	60	Stirling Chrys.... ..	62
Ghent Quinquennial Exhibition, preparations for the	57	United Hort. Benefit & Provident	63
Grape Madresfield Court	60	Soil, loss of nitrates from the...	57
Hybrid, the term... ...	59	South African Combretaceae, the	52
Kew gardeners	57	Sweet Pea trials at Reading	57
Larch saw-fly pest in the Lake District	49	Sycamore, a precocious	59
Leaves, the migration of mineral substances from	56	Tulips, the origin of cultivated	58
Market fruit-garden, the	51	Veitch memorial trustees, awards by the	57
Market gardening—		Week's work, the—	
The Vale of Evesham	58	Flower garden, the ...	55
Nursery employés entertained	57	French garden, the ...	55
Obituary—		Fruits under glass ...	55
Webb, Edward ...	64	Hardy fruit garden, the	54
Palms, packing, for export	57	Kitchen garden, the ...	54
		Orchid houses, the ...	54
		Plants under glass ...	54

ILLUSTRATIONS.

Alyssum alpestre in a Swiss Alpine garden 52
Anemone narcissiflora in a Swiss Alpine garden... .. 57
Anemone pulsatilla "Mrs. Van der Elst" (Coloured Supplement)
Erinus alpinus in the Val de Nant Botanic Garden, Switzerland 58
Rhododendron dauricum on the rockery, Kew Gardens 51
Rose Mrs. Charles Russell 61
Viola gracilis var. Valderia in the Pont de Nant Alpine garden, Switzerland 53
Wahlenbergia (Edraianthus) Pumilio growing in a Swiss Alpine Garden 59

THE LARCH SAW-FLY PEST IN THE LAKE DISTRICT.

SOME weeks ago a paragraph went the round of the daily newspapers announcing that the Larch saw-fly pest had appeared in the Lake District last summer, had caused an immense amount of damage to the trees, and that all methods adopted to kill the fly had, so far, failed.

Paragraphs similar to this have appeared in the papers for the last five or six years, but the news seems always fresh and the apparent helplessness of the foresters unabated.

It may be of some value, therefore, for one who has been associated with a thorough investigation of the pest, and an elaborate experiment to check its ravages, to write a plain statement of what has been discovered and what has been the result of the experiment.

The first intimation of the present attack was in the year 1906, when specimens of the larvæ of the saw-fly were sent to us from some Larch plantations on the slopes of Bassenthwaite Lake, in Cumberland. In the following year we received a report that the extensive Larch plantations on the estate of the Manchester Corporation at Thirlmere were badly attacked, and it was then that our investigations and experiments began.

The adult saw-fly—or to give it its full name and title—the large Larch saw-fly (Nematus Erichsonii)—emerges from its cocoon during the last weeks of April or the beginning of May, and flies to the young terminal shoots of the Larch trees, where a series of little holes are made by the saw-like ovipositor, and some 40 or 50 eggs are deposited beneath the bark. In a few days a small caterpillar emerges from each of the eggs, and, feeding upon the young leaves, grows until it attains a length of three-quarters of an inch, and is full grown.

Early in July these great caterpillars, which may be easily recognized by their bright-green colour and jet-black heads, drop to the ground and spin their cocoons. All through the autumn and winter months the cocoons remain on the ground—covered by a layer of moss and Pine needles—and it is not until the following spring that they awaken to life again as the adult saw-fly.

When the attack is severe the number of the caterpillars on each tree is prodigious, and the damage done to the plantations enormous. The trees become brown in June and July, as if it were winter. The young branches are twisted and contorted, the growth of wood is checked, and the trees have all the appearance of being dead.

There is good reason to believe, however, that healthy trees can survive after two or three, or even more years, of severe attack, and a great deal of the tree-felling that has been done in the Lake district has been altogether premature. But whether the trees are killed or not, there can be no doubt whatever that the saw-fly causes an immense loss of good wood to the owner of the plantations.

What can be done, then, to prevent or to stop these disastrous epidemics?

To answer this question it is necessary to remind the reader that there are two ways of attacking such a problem. There is the direct way, which is usually obvious, and the indirect way, which is not so obvious.

The direct way in this case would be to destroy the caterpillars by spraying the trees in the spring, or to collect and burn the moss and litter under the trees with its burden of cocoons in the winter.

Various suggestions have been made as regards the sprays to be used, and the method of collecting the cocoons; but it is perfectly certain that in any district where there are many Larch plantations, the direct attack will be very expensive, and very probably unsuccessful. In an old-established plantation on a steep hillside, where the trees are 40 or 50 feet in height, the practical difficulties of effectively spraying the branches or of collecting all the moss and litter beneath the brambles and undergrowth, are insuperable, and no one but an armchair philosopher or a newspaper correspondent believes that such remedies could be efficiently applied.

The indirect method of attack is to find out by observation and experiment what it is that, in a natural state, keeps the insect in check, and to assist nature by encouraging the natural enemies of the pest.

The observations that were made by Dr. Gordon Hewitt in 1907 and 1908 supported and confirmed by those of Mr. J. Mangan in subsequent years, have proved that the Larch saw-fly has three principal enemies to contend with in a state of nature. These are (1) the insectivorous birds which feed upon the caterpillars; (2) an ichneumon parasite (Mesoleius aulicus), which destroys the larvæ after they have pupated; and (3) a small field vole, commonly called the "meadow mouse," which feeds upon the cocoons. The principal birds that have been observed to feed upon the caterpillars are the blue tit, the marsh tit, and the great tit, but there are others, such as the chaffinch, the starling, and the rook, that undoubtedly assist in their destruction.

The effect of the ichneumon parasite in keeping the saw-fly in check may be observed by collecting a large number of the cocoons in the winter months, and observing the number of ichneumons that emerge from the cocoons in the spring as compared with the number of saw-flies. Of the cocoons from the Thirlmere plantations, it was found by the naturalists of the Manchester University that, in 1908, 5.8 per cent. were parasitised, in 1909, 10.9 per cent., and in 1910, 62 per cent. The ichneumon parasite therefore was found to be giving very material and progressive assistance in the good work of destroying the saw-fly.

The meadow mouse is also a valuable ally, for when we are collecting cocoons in the winter months we discover that from 25 to 50 per cent. are empty, and show the characteristic tooth-marks of this active little rodent.

With the evidence thus afforded of the destruction of the saw-fly by its natural enemies the problem of the indirect attack was considerably simplified, and it was felt that if anything could be done to stimulate the increase in number of any one of these groups of assistants the saw-fly as a serious pest would cease to exist.

The meadow mouse, however, although in this respect a friend is regarded by the forester as a destructive little creature, and it was thought best to leave it alone. To encourage the ichneumon parasite presented many practical difficulties. It was felt, therefore, that the encouragement of the birds was the means which promised the best results.

It was found, when we began our work, that in the larch plantations of the Lake District the small insectivorous birds were not very plentiful, and it was thought that this could be accounted for, to some extent, by the difficulty they would have in finding suitable nesting places among the coniferous trees. It was decided, therefore, to suspend in the trees a number of nesting boxes in which these birds could rear their broods of young and feed them on the saw-fly caterpillars. The results of this experiment exceeded our

expectations, as the following figures show:—

Year.	No. of Boxes Suspended in the Woods.	Percentage of Boxes Occupied.
1908 ...	... 60 ...	... 31
1909 ...	... 174 ...	... 46
1910 ...	... 280 ...	... 57
1911 ...	... 347 ...	... 66
1912 ...	... 341 ...	... 71

There can be no doubt whatever, not only from these statistics, but from direct observations in the plantations, that the number of tits and other birds has greatly increased.

And what has been the result? The result has been that in the summer of 1911, and again in the summer of 1912, the Larch plantations of the Manchester Corporation at Thirlmere have been declared practically free from the saw-fly pest, the trees were green and healthy all through the season, and a good growth of wood was recorded.

It may be said, and, indeed, it has been said, that this result is due not to the birds but to the natural increase of the ichneumon parasite. If that is the case, why is it that on the slopes of Skiddaw, at Windermere and elsewhere, the pest is as bad as ever? We read that on Skiddaw alone 30,000 Larch trees have been felled this year on account of the pest, and from other districts we have reports of widespread destruction. The Thirlmere estates alone, so far as our information goes, show a well-marked immunity.

It is undoubtedly true that the ichneumon parasites and the meadow mice at Thirlmere have played an important part in the process of extermination, but it is to the increasing number of birds that we must give the credit of administering the final coup de grâce that has freed the Larches from their enemies.

It is not necessary to say more about the extraordinary success of this indirect method of attacking the saw-fly problem, but it is probable that many inquiries may be made as to the details of our methods, and I will endeavour to answer some of these before bringing this article to a conclusion.

It has been stated, and with some justification, that the remedies suggested for dealing with the saw-fly pest are too expensive. The nesting boxes we use are made by the carpenters on the estate, and cost less than eighteen-pence apiece. The initial cost of the boxes, therefore, is not excessive, and if they are cleared out every year they will serve for several seasons, and their annual cost will be very small. It is advisable, however, to help the birds in the winter by giving them food on properly constructed feeding platforms, similar to those devised by Baron von Berlepsch and described by Hiesemann in his book *How to Attract and Protect Wild Birds*, Wetherby, 1908. This will add to the total cost of the remedy, but when the enormous loss that many landowners have suffered from the saw-fly pest is taken into consideration the total cost represents a very small sum for "insurance" money.

It would be interesting if it were possible to give a detailed statement of the birds that have used the boxes for their nests; but as we have been careful not to disturb them in any way during the breeding season we can only form a general impression of the birds by the remnants of eggs and nests that are found in the boxes in the winter. There can be no doubt, however, that three species of tits, the chaffinch, robin, and starling will use them freely, and this year we have good reason to believe that at least one box was occupied by the pied flycatcher, a comparatively rare bird but surely a good friend. All these birds can be classified as "useful," for even the chaffinches and starlings can do but little harm to any kind of crop in the Lakeland districts. The encouragement of these birds is almost entirely beneficial, to say nothing of the charm and grace they add to the beauty of the woods.

In conclusion, may it be said that this great and successful experiment at Thirlmere is an object lesson in the importance of the proper care and protection of our native wild birds. If the landowners would only realize that by a little money spent every year, and by a little interest taken in their feathered friends they might be saved the periodic losses they suffer from the attack of insect pests, this annual complaint "that all methods adopted to kill the fly have so far failed" would no longer be heard in the land. *Sydney J. Hickson, The University, Manchester.*

THE MAKING OF A BOWLING GREEN.

(Concluded from p. 34.)

THE operations which have been described so far apply equally to a turfed or sown green. In the latter case the seed should be sown direct on to the surface obtained. To do this properly it should be apportioned. About 6 bushels of seed should be used, and the whole surface divided into 12 strips of 10 feet width each. If now the space is halved the other way about we get 24 strips on each of which to sow a peck of seed. Naturally the sowing should be done in still weather, so that the wind may not carry the seed where it is not intended to go, and care should be exercised that all parts have an even share. It is well to cover the sown ground, strip by strip, with ½ inch of fine soil which has passed through a ½ inch sieve, and is free from stones. The soil must be well levelled out; the level and straight-edge must be used throughout, and any shallow parts brought up or rise reduced. The stumps should be well out of sight after this operation, and it is therefore necessary to be very careful that all the strips are on the same level.

Treading on the ground should be avoided during this operation; it will be well to do all the levelling and correcting from the unsown ground.

When the whole green has been finished it should have a good watering, and water should be given subsequently whenever necessary. After the seed has grown and the grass has attained to a height of about 3 inches, it must be cut carefully with a scythe or hook, but subsequent cuttings can be made with a good mowing machine set low to ensure a close cropping. Ordinary machines when set very low leave, as a rule, ridges made by the knives, which are objectionable. Most makers, however, can supply machines which, having an extra knife, leave no ridges; therefore if it is necessary to acquire a new machine it is well to state the purpose for which it is required.

Cutting, sweeping, rolling and watering wherever required constitute the work necessary to keep the green in order. If weeds make their appearance, and they are sure to, they must be destroyed as early as possible. In fact, the green keeper should be always on the look out for weeds, and employ his spare time in eradicating them.

A sown green should be allowed to rest throughout the first season, so that the turf may become thoroughly established and hard. This lapse of time, however, counts much with many clubs and if, as is usually the case, the additional cost can be easily defrayed turfing is generally preferred.

A sufficient quantity of turf must be brought to the ground and prepared. The surface after levelling should be covered with a layer of sand on which the turf is to be bedded. The turves used should be of equal size, say, 9 inches square. To obtain this, as well as even thickness, it is advisable to use a turf-box. This consists of a board of convenient size whereon a 9 inch square made of hoop-iron is fastened. The hoop-iron should project evenly about 1 inch above the board; its edges must be sharpened with a file, so that they will cut any turf pressed upon them. If a turf slightly larger than the box is placed upon it face downwards and well pressed in by means of a board a square of the required size is obtained. With an old scythe knife or similar cutting instrument rip off the projecting soil by passing the knife along the edges of the box, thus producing turves of equal thickness.

When laying them, the turves should be packed very close, leaving no interstices, and be beaten down by means of a hand-beater or kind of mallet. It is well to start from one corner diagonally across the green, laying the turves in the same manner as one would lay tiles. The straight-edge and level must be continuously applied, and any slight inequalities beaten out as the work goes on. When the whole surface has been laid the turf should be covered with a thin layer of sand and finally levelled off.

There remain the bank to be turfed and the ditch to be covered. The turf on the former should reach right down to the grille in the ditch, and any available space on the top of the bank may be covered with the same class of turf, so that at any future time there is grass available for patching.

The ditch should be left open down to the clinkers. Any soil or sand which may have been spilt should now be removed and any rubbish which may have collected cleared out. A grating (the grille) of the width of the ditch, made from stout battens and painted green, should be placed upon blocks put short distances apart in the bottom of the ditch, or the ditch may be filled to the required height with small clinkers, and the grille laid directly upon the latter, so that its top is about 1 inch below the turf. *H. P. L.*

RHODODENDRON DAURICUM.

THE plant of Rhododendron dauricum, illustrated in fig. 26, is flowering in the rock-garden at Kew. The aspect is south-west.

During a mild winter this Rhododendron provides pleasing colour in the garden, although it cannot be recommended for extensive planting, as the plant is liable to damage from frost. The flowering season is December to February. The plants grow from 2 feet to 3 feet high. The flowers vary a little from the shade of rosy-purple in seedling plants. One specimen in a batch of seedlings flowering at Kew, near King William's Temple, has dark, richly-coloured blossoms. The variety atrovirens flowers at the same season as the type, but is readily distinguished by its evergreen or semi-evergreen character. R. dauricum is a native of Dahuria and Mandshuria, and is one of the parents of R. præcox (R. dauricum × R. ciliatum), Rosy Bell and Early Gem. *A. O.*

THE MARKET FRUIT GARDEN.

SCAB AND CANKER ON COX'S ORANGE PIPPIN.

IN pruning some fully-furnished trees of Cox's Orange Pippin in the eighth year from planting it has been necessary to shorten a great number of leaders which, if healthy, might have been left uncut, because there was scab on the wood, and a smaller number had to be cut back on account of canker showing on the shoots. The bursting-out of canker on mere twigs is almost peculiar to Cox's Orange Pippin. At any rate, it troubles me hardly at all in the cases of other varieties now that King of the Pippins and Potts's Seedling, which suffered in the same way, have been grubbed up. Liability to this annoying development of canker passes away to a great extent as the trees grow old and cease to make sappy new shoots. Probably aphis attack is largely the means of wounding the skin of tender young shoots, and thus admitting the spores of canker. But to return to scab: where leaders are healthy, even if rather thin and lanky, it has been deemed desirable to leave them uncut if they do not cross others or point in wrong directions, partly in order to avoid the multiplication of side shoots which cutting would induce, and partly because I think that the less new wood the less will be the attack of scab upon the trees in the coming season. The temptation to prune lanky leaders is very strong, and a tree presents a much neater appearance after having the leaders shortened than when they are left entire. For the two reasons given above, the temptation has been usually resisted. Scab seems to attack chiefly, if not exclusively, new wood, and, although leaders left entire will extend, they will form much less new wood than if shortened.

BITTER PIT IN APPLES.

With respect to the quotation from Dr. Alfred J. Ewart (of Victoria) on p. 487, it is an established theory that bitter pit in Apples is not a fungoid disease, though it is often confused with Apple fruit spot (Cylindrosporium pomi), which is of fungous origin. But, as to the statement that bitter pit is due to poison in spray stuff, I am under the impression that the disease was widely prevalent in this country long before spraying became common. Dr. Ewart admits that ozone, ammonia, and nitric acid in the atmosphere can induce bitter pit, and he may be right in his conjecture that poisons used in spraying also give rise to it. I have had bad attacks of bitter pit in only one or two varieties of Apples in an orchard containing many varieties, although all were treated alike in respect of spraying. Moreover, the trees were not sprayed at all after the Apples were bigger than large Peas. Further, unless I am mistaken, bitter pit develops in the course of prolonged storing of the fruit. Moreover, it is quite common, when Apples are pared, to find decayed cells, although there is no external pitting, and in such cases it can hardly be contended that the malady is due to external injury from spraying or other agency.



FIG. 26.—RHODODENDRON DAURICUM ON THE ROCKERY, KEW GARDENS.

(From a photograph taken at Christmas.)

The name "bitter pit" is not altogether appropriate, as in many cases there is no discernible bitterness. The subject is one which stands in need of thorough research.

COLOUR IN APPLES.

Evidence in support of the old opinion that sunlight is the chief agent in developing colour in Apples is afforded in a bulletin from the Pennsylvania Experiment Station on *The Fertilising of Apple Orchards*. Various dressings were applied to the trees in order to ascertain their respective effects upon growth of wood and yield and colour of fruit. Farmyard manure and nitrogenous artificial manure alone or in combination notably increased growth and yield, but reduced colour. The latter is attributed to "delayed maturity and a diminished light supply to the fruit, due to an increase in the density of the foliage." It is added that experiments proved that exposure to sunlight after picking increased redness by over 35 per cent., while some of the same lot of fruit stored in darkness showed practically no deepening of colour. The conclusion is that "maturity in sunlight on the trees is undoubtedly the great influence affecting redness in fruit. Phosphates, whilst increasing the yield,

did not affect decisively either growth or colour. Potash was not tried alone, and in combination it showed doubtful effect on growth, yield, and colour alike, the results in two sets of experiments being contradictory.

It would be interesting to learn how those who attribute colouring to rain rather than to sunshine explain why it is that Apples netted to preserve them from birds show the pattern of the netting in green markings, while the spaces between are red. Where the netting touches the fruit it must tend to keep rain water longer in existence under it, and yet it prevents colouring where it touches. Why? Surely because it shades where it touches the fruit. *A Southern Grower.*

A SWISS ALPINE GARDEN.

(Concluded from p. 43.)

THE Anemones of this garden comprise the well-known A. narcissiflora (see fig. 29), with its trusses of creamy-white flowers, a plant common in many parts of the Alps. The Himalayan as well as the European members of the genus Androsace were all growing freely; a small well-flowered plant of A. primuloides was specially noticeable, while A. villosa and several other species from the European Alps had formed healthy tufts. Among the Madworts Alyssum alpestre (fig. 27) made a beautiful patch of yellow. It is a somewhat taller-growing plant than A. montanum and a native of South-Western Europe.

Campanulas of various kinds were in evidence, the species ranging from the little moraine-loving C. cenisia, only an inch or so high, to the taller inhabitants of the woody slopes, such as C. latifolia. C. thyrsoides is a characteristic plant with dense spikes of yellowish flowers; it belongs to the biennial section of the family. Species of Dianthus were in plenty, the plants blooming profusely; they included D. alpinus, the Alpine Pink, with rich rose-coloured flowers; D. callizonus, from Transylvania, with beautifully-zoned flowers; D. frigidus, a near ally of D. sylvestris, but of more compact habit; D. gelidus, a form of D. glacialis, the Glacier Pink; and D. furcatus, a pretty free-flowering species of taller habit from the Piedmont. Erinus alpinus (see fig. 30) has been naturalised in parts of this country on old walls. The colour of the flowers ranged from deep rose to white. The Globularias, Globe Daisies, including G. nana, and G. cordifolia, were covered with their pretty heads of steel-blue flowers, one of the finest being G. bellidifolia. Onosma was well represented by the hairy-leaved O. sericeum from Asia Minor, with numerous stems carrying pale-yellow bells.

Phyteuma Sieberi, an attractive little plant, is a close ally of our native Rampion (P. orbiculare), but smaller and of more compact habit. It was one of several which were in flower. Ranunculus parnassifolius, which in this country frequently refuses to produce other than flowers without petals, was in full beauty on the shady side of one of the mounds. Others of this genus in flower were R. alpestris and R. glacialis. Viola gracilis var. Valderia (V. heterophylla) (fig. 28) is a dainty little plant for a half-shady corner and is more slender than the type. The choicest of the Wahlenbergias (Edraianthus) was the Dalmatian W. Pumilio (fig. 31), the large flowers being packed closely all over the tufted plant, which was only an inch or two high. Among numerous other plants I noticed Potentilla reptans, spreading freely, and bearing many beautiful golden-yellow flowers.

With few exceptions the inhabitants of this Alpine garden appeared perfectly happy in their congenial surroundings, and, to the lover of Alpine plants, it was an enjoyable experience to see so many choice subjects gathered together in a small area. The plants I have mentioned represent but a small proportion of those grown in this interesting garden. *W. I.*

THE SOUTH AFRICAN COMBRETACEÆ.

FEWER constituents of a tropical vegetation contribute so magnanimously to its floral beauty than the members of the Natural Order Combretaceæ. Especially is this applicable to Tropical Africa, where the many Combretaceous herbs, shrubs, huge trees and climbers attaining to the tops of the highest trees, invest the landscape, by their brilliant and flaming colours, with a splendour essentially tropical. Flowering as they often do in the winter season, when leafless, and when much of the surrounding vegetation is apparently quiescent, their beauty is emphasised, and, moreover, when floristically on the wane, their fruits, often as brilliantly coloured, are followed by a succession of autumnal and wintry leaf-tints comparable only to that of certain Oaks, Acers and Hawthorns of the Northern Hemisphere.



[Photograph by R. A. Malby, F.R.P.S.

FIG. 27.—ALYSSUM ALPESTRE IN A SWISS ALPINE GARDEN.

Nothing would be gained by giving an exhaustive list of the more beautiful species characterising this continent, but chief among these, Combretum cinnabarinum from the Cameroons, bearing numerous cinnabar-coloured spikes, C. grandiflorum from Sierra Leone, the Gambian C. racemosum, C. bracteosum and its ally, C. mossambicense with scarlet flowers, not unlike the cultivated Greyia Sutherlandii, may be noted.

Other species again, as instance the widely-diffused Terminalia sericea, clothed with its silvery indumentum, brighten the otherwise dreary and inhospitable tracts of the Kalahari Region and afford often the only shade available. Many yield excellent timbers, though the sum-total of their properties and peculiarities still awaits publication. Marloth, alluding to C. primigenum, a tree occurring on the banks of the periodic streams at Usakos, in Hereroland (German S.W. Africa), and attaining to a height of 60 to 70 feet, with a trunk diameter of 6½ feet, states that the wood when dry is so compact that the axe rebounds from it. Associated with this tree is an ancient local legend, which ascribes to it the origin of the human race as well as cattle, though the Hereros are convinced that goats and sheep have originated from the rocks. This belief still holds good with many natives, who, on passing the tree, pluck a handful of grass and place it at the foot of its trunk as an offering. Similarly the Wanyamwezi, in the Lake District of Central Africa, fondly hope that by building little huts of the wood of C. grandifolium, spirits may be scared away. In Sierra Leone the leaves of C. micrantha, according to French missionaries, serve as a cure for acute cases of colic and biliary attack, and a decoction of the wood and bark of C. quagenze, known to the natives of Angola and Upper Congo as "Muhondongolo," constitute a vermifuge for children. The roots and twigs of the Lungalasóge (C. tinctorum) serve as a black, and their fruit as a yellow dye.

Numerically, the species of Combretaceæ of South Africa do not compare favourably with those of the tropical element, and must be regarded as outliers of an essentially tropical phase of vegetation. They number 25 species, comprising the genera Terminalia, Combretum, Pteleopsis and

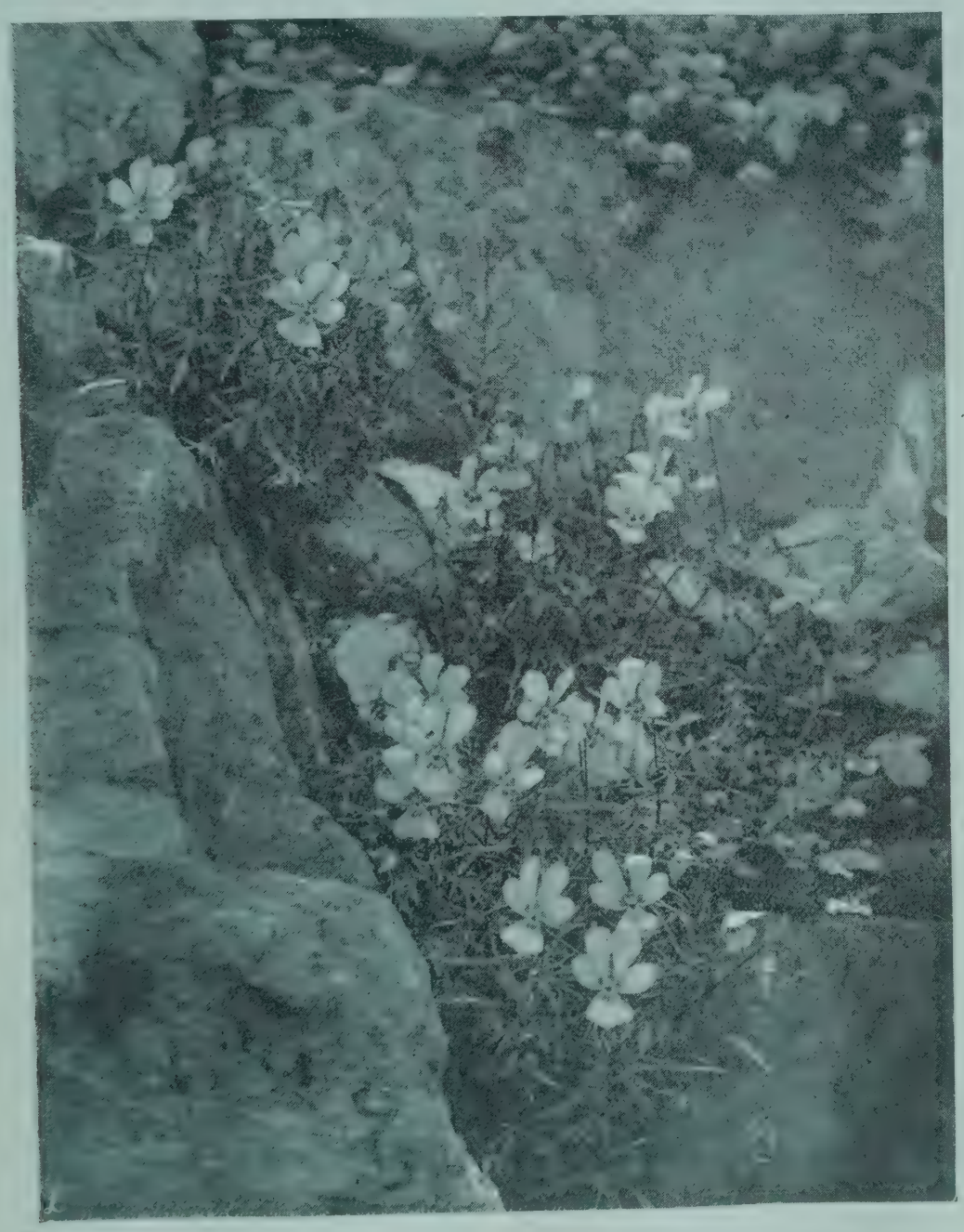
Quisqualis, and, curiously, the similarity of their distribution to that of the indigenous Myrtaceæ is associated with an identity in the number of genera, though not in species, as instance :—

MYRTACEÆ = Eugenia, 13 spp.; Heteropyxis,* 2 spp.; Metrosideros, 1 sp.; Barringtonia, 1 sp.

COMBRETACEÆ = Combretum, 21 spp.; Terminalia, 2 spp.; Pteleopsis, 1 sp.; Quisqualis, 1 sp.

In Cape Colony the Combretaceæ are essentially coastal in their range. The most south-westerly point is attained by C. salicifolium in the Uitenhage Division, whence, hugging the east coast, they pass through Kentani, Pondoland, Natal and the Delagoa Bay region, and then stretch northwards into tropical territory, and inland into the Kalahari region, where, in the Transvaal, they attain their highest concentration with 18 species, Natal being second in number of species. The majority do not attain to any appreciable size, nor occur so gregariously as to characterise the vegetation, except perhaps towards the close of the year, when certain of the species assume their autumnal tints. Terminalia phanerophlebia occurs sparingly in the Transvaal and extends eastwards to Delagoa Bay, where the only known South African Pteleopsis, viz., P. myrtifolia, has been detected within the confines of the South African territory. T. sericea similarly abounds in the former region, where it affords a wood held in high esteem by the Dutch, and also by the natives of Portuguese East Africa. The most southerly point in the distribution of this species appears to be Grahamstown, in Cape Colony; but this locality for the plant is open to doubt, as it is based on only one specimen, and there are none from any other point south of the Transvaal. The remaining genus Quisqualis, represented by a solitary, shrubby or scandent species, is endemic to Natal and Zululand, and is characterised by the slender long-tubed flowers.

In the preparation of this work, I have availed myself of the facilities afforded by the National Herbaria, and have considered it expedient to follow Engler and Diels'† views as regards the species as closely as possible, making only the necessary changes which are coincident with the lapse of time or which appeared desirable in view of an examination of more complete material.



[*Photograph by R. A. Malby, F.R.P.S.*

FIG. 28.—VIOLA GRACILIS VAR. VALDERIA IN THE PONT DE NANT ALPINE GARDEN, SWITZERLAND.

(See p. 52.)

KEY TO SOUTH AFRICAN GENERA

I. Flowers apetalous. Style hairy towards its base. Fruit invariably two-winged.—(1) *Terminalia.*

II. Flowers with petals. Style glabrous.‡ Fruit two to five-angled or winged.

i. Fruit indehiscent. Receptacle short,‡ stamens exserted.
Flowers invariably perfect. Fruit four to five-winged or angled.—(2) *Combretum.*
Flowers staminate or perfect. Fruit preponderatingly two-winged.—(3) *Pteleopsis.*

ii. Fruit dehiscing at the apex along the angles. Calyx slender and tubular, with the stamens inserted within the throat of the tube.—(4) *Quisqualis.*

I.—TERMINALIA.

1.—T. PHANEROPHLEBIA, Engler and Diels in *Engler Pfl. Fam. Afrik.* IV., 19, t. xii., f.c. (1900).

A shrub 2 to 3 m. high; second-year branchlets terete, greyish-brown, stringy-barked, glabrous; ultimate twigs short, compressed towards their tips, densely white-sericeous (yellowish in a dried state); internodes very short. Leaves crowded towards the apices of the twigs, spreading; petiole 0.5 to 2 cm. long, with a ventral groove, white-sericeous; leaf-blade obovate, shortly acuminate or cuspidate, cuneate towards the base, 3 to 5 cm. long, 1.5 to 2.2 cm. broad, thinly coriaceous, when young sericeous on both surfaces, when mature sparingly and appressedly pilose; the upper surface dull green, papillate, with an impressed midrib and reticulations, the lower surface with the costa and reticulations very prominently raised; axil-tufts absent; margin slightly waved and obsoletely serrate towards the apex of the leaf. Spikes numerous, slender, arcuate, solitary in the axils of the leaves, narrowly cylindric, 3 to 6 cm. long, 7 to 12 mm. broad; the axis, bracts and lower half of the receptacles densely white-sericeous; bracts very minute, caducous. Receptacles 5 to 6 mm. long, its lower part narrowly fusiform, its upper part shallowly cup-shaped, 3 to 4 mm. diameter, covered sparingly with white short hairs without, pilose within; disk minute, bearded; segments of the calyx deltoid, pilose within. Stamens exserted, 4 to 5 mm. long, glabrous. Style stoutly subulate, pilose towards the base, often exceeding the stamens. Fruit two-winged, shortly pedicellate, ovate-oblong, more or less rounded or slightly emarginate at the apex, obliquely rounded at the base, 2 to 3 cm. long, 1.5 to 2 cm. broad, puberulous all over, the body raised, dark madder-brown when ripe, often invested with a prominent umbo, the wings 5 to 7 mm. broad, yellowish, undulate; pedicel sericeous, 1 to 2 mm. long.

Burtt-Davy in *Transvaal Agric. Journ.*, v (1906-1907), 424. Kalahari Region.—Transvaal, Barberton, Honeybird Creek, 540 m., March-April, 1896. Galpin, 884 (fruit spec.). Komati Poort, 30 m., Dec., 1897. Schlechter, 11,743 (flow. spec.).

This plant is easily distinguished from the remaining South African Terminalia (T. sericea) by its petiolate, relatively shorter and broader leaves, their prominent under-surface reticulations and the different conformation and indumentum of the fruit. The species extends eastwards from the Transvaal to Delagoa Bay, where it has been collected by Junod. *R. A. Dümmer.*

(To be continued.)

HARDY FLOWER BORDER.

ACONITUM ACKERMANNII.

THIS is one of the prettiest of the blue and white bicoloured Monkshoods, and is perfectly hardy. It grows only about 2 feet high, so that it is suitable for planting in small gardens. The spikes of hooded flowers are produced during August. Monkshoods, though never very popular hardy flowers, are highly useful. *S. A.*

* In the preface to a former paper on the Eugenias of North Africa, cf. *Gardeners' Chronicle*, lii, 127 (1912), this genus was omitted, as I was at that time unaware of its transference from the Natural Order Lythraceæ to Myrtaceæ; cf. *Bull. Herb. Boissier*, v, 4, 439; Kew *Bulletin* (1905), 148.

† Engler and Diels in Engler's Monograph, Afrik. Pfl., [illegible]

‡ In the South African species at least, except C. Kraussii, which has a basally ha[illegible]

The Week's Work.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir TREVOR LAWRENCE, Bart., Burford, Dorking.

COOL-GROWING CYPRIPEDIUMS. — Cypripediums may be had in flower all through the winter months, for the majority of the winter-blooming varieties are comparatively cool-growing plants. A shady place in almost any house having winter temperatures ranging between 50° and 60° is suitable for them. As a guide to beginners I may instance the following species: C. Spicerianum, C. Charlesworthii, C. villosum, C. Boxallii, C. Fairrieanum, C. purpuratum, and C. insigne with its numerous varieties. Important hybrids include C. Leeanum, C. Alcibiades, C. Euryades, C. Actæus, C. aureum, C. Beeckmannii, C. Niobe, C. Tityus, C. Arthurianum, and C. Earl of Tankerville. As the plants pass out of flower any that are pot-bound should be repotted into larger receptacles. Strong, healthy plants may be shifted into pots two sizes larger. The receptacles should be nearly half filled with drainage materials according to their sizes, the smaller the pot the less drainage being employed. Almost any kind of rich, porous soil is suitable, the general practice being to prepare a mixture of equal parts good fibrous loam, ordinary English peat and Sphagnum-moss, with plenty of broken crocks added. Unhealthy plants should be divided and the divisions repotted singly into small, well-drained pots. Fortunately the majority of these cool-growing Cypripediums are of easy culture, but they require extra care after repotting. Stand the plants in a rather shady part of the intermediate house, affording them only a moderate quantity of water whenever moisture is necessary. Well-established specimens require full exposure to the light, but not direct sunshine, and plenty of moisture at the roots. Damp the spaces between the pots two or three times daily when the atmosphere of the house is dry, but guard against an excess of atmospheric moisture. A light spraying overhead occasionally, especially when the sun is shining, is beneficial.

PLATYCLINIS.—Plants of the graceful Platyclinis glumacea suspended well up to the roof-glass in the intermediate house are showing rosy-coloured growths, and at this stage the roots should have a gradually increased supply of water. On sunny days the undersides of the leaves should be lightly sprayed, both in the mornings and afternoons in order to destroy red spider. An occasional cleaning of the foliage with a soft sponge is also to be recommended. The work of repotting may be done at once, or it may be deferred until after the flowers have faded. Shallow pans furnished with strong wire handles are the most suitable receptacles, and they should be about half-filled with crocks for drainage. The compost should consist of Osmunda fibre and Sphagnum-moss in equal parts; cut the materials into rather small portions, and incorporate with them a few small crocks or coarse silver sand. These directions also apply to P. latifolia which is starting into growth. P. uncata and P. Cobbiana are in flower, and may be repotted, if necessary, soon after the flowers fade. Plants of P. filiformis are at rest, but the roots should not be allowed to become excessively dry, as the thin leaves are liable to become attacked by red spider, and these, when once infested, soon turn yellow and fall. All the Platyclinis thrive well the whole year through in a shady part of the intermediate house; they require plenty of light, but not direct sunshine.

CYMBIDIUM.—Plants of Cymbidium (Cyperorchis) Mastersii, C. Tracyanum, and C. Winnianum have finished blooming and are making fresh growth. At this stage repotting may be done if necessary. These Cymbidiums grow well in a mixture of equal parts fibrous loam, Osmunda fibre chopped up rather small, and Sphagnum-moss, adding plenty of broken crocks and coarse silver sand. Very little crocking is required, but the soil should be made as porous as possible. Press the materials only moderately firm, and leave plenty of space for watering. Newly-potted plants do not require much water at first, and should be shaded from strong sunshine, but established specimens with plenty of roots should be afforded a plentiful supply of moisture at all times. Grow the plants in the cooler part of the intermediate house, as far away from the hot-water pipes as convenient. C. eburneum, C. Lowianum, C. Colmaniæ, C. insigne, and other species that are showing their flower-spikes should be afforded plenty of water at the roots.

THE HARDY FRUIT GARDEN.

By B. GOODACRE, Gardener to Sir ERNEST CASSEL, Moulton Paddocks, Newmarket.

STRAWBERRY PLANTATION.—If the planting was not done in the autumn, the soil of the beds should be lightly and carefully broken up, both between the rows and the individual plants. Make a critical examination for weeds, which may often be found quite close to the crown of the plant; these should be pulled up. It is a bad plan to use a spade for this work, as it tends to isolate the plant, cutting it off from the neighbouring soil and thus preventing free circulation of moisture throughout the bed. This disadvantage is more noticeable on heavy, retentive land. If the soil is forked to a depth of 3 or 4 inches, it will be all that is necessary to open up the surface for the purpose of receiving stimulants. Should the bed be excessively damp, a few days should be allowed to elapse, so that the soil may dry somewhat before a heavy mulching of long, fairly-rank dung is applied. The manurial properties will be gradually washed down to the roots by the rains, and, long before the plants are in flower, the straw will be sweet and act as litter to keep the berries clean. It will be beneficial to examine the older beds, thinning the crowns where they are too thick, for if all are allowed to remain, the quality of the fruit will be inferior. By this means a freer circulation of both light and air will be possible, and this improves not only the size, but the flavour of the fruit. The benefit of thinning is particularly noticed in a season such as 1912, when large numbers of berries rotted before they reached maturity. Fine bone-meal or fertiliser may be scattered lightly between the rows after breaking up the soil, but, before the mulching is applied, care must be taken not to cover the leaves or crown of the plant with straw or clods of earth, as this will result in deformed or weakened flower-spikes. If runners intended for forming fresh plantations are still in the layering pots, they should be planted at once. The pots are filled with roots, and the latter should be disturbed as little as possible when the plants are turned out. The results must not be expected to equal those from autumn-planted runners; but, in establishments such as Moulton Paddocks, where thousands of good, strong early runners are required for forcing, the plants will be found very useful; I always cultivate a number of runners especially for this purpose, placing the plants thickly in the rows, which are formed at a distance 2½ to 3 feet apart. After the first season the surplus plants are removed, leaving a bed of good, strong, fruitful plants for another year.

THE KITCHEN GARDEN.

By JOHN DUNN, Foreman, Royal Gardens, Windsor.

POTATOS IN PITS.—If sufficient heated pits are available for maintaining a succession, Potato sets should be planted now; but it is better to delay planting for a fortnight than to have a break in the supply after lifting has commenced. The pit should be filled afresh with new leaves, which make the best bed for the purpose, as a slight bottom-heat only is necessary. The leaves should be trodden tightly and arranged up to within 2 feet of the roof-glass. A layer of soil 9 inches deep should be spread over the surface; employing materials from a spent Melon or Cucumber bed. Assuming that the sets have already been started into growth, they should be planted carefully in drills 2 feet apart, allowing 9 inches between the plants in the lines. The tubers should be lightly covered with soil at first, but as growth advances the earth should be drawn about the plants as earthing-up becomes necessary. If the soil is moderately moist at the time of planting little water will be necessary until the growths are several inches high; when the plants are growing freely liberal supplies of soft water should be afforded, and sufficient air admitted to prevent the shoots from becoming drawn. If only an occasional dish is required Potatos may be grown in pots in any structure having a temperature of 50°, but the plants must be stood close to the roof-glass. If the temperature of the house has to be raised for other subjects the Potatos may be removed to cooler quarters without injury. Pots 10 inches in diameter should be well crocked and three parts filled with loam and leaf-mould. Three medium-sized tubers should be inserted in each pot. When the plants require earthing-up the pots may be filled to within 1 inch of the rim. Tubers intended as sets for successional planting should be selected and placed in shallow trays to promote the growth of stocky, short-jointed shoots. This is an important detail, and should be attended to before growth commences. For pit or pot culture Sutton's May Queen is one of the best varieties.

RHUBARB.—Although Rhubarb will grow in almost any situation, the plants only succeed perfectly when planted in rich soil and an open position. The ground should be trenched now, mixing a liberal quantity of farmyard manure with the soil as the work proceeds. If possible the plantation should be made in some part of the garden where the roots may be covered in the spring without the protective material creating an eyesore. When the ground has been trenched and allowed to settle, the roots may be planted in rows 5 feet apart, allowing 3 feet from plant to plant in the rows. Rhubarb roots intended for forcing should be lifted and exposed to the weather for a few days before placing them in heat; Daws's Champion is one of the best varieties for forcing.

PEAS IN POTS.—An occasional dish of Peas may be obtained by making a sowing in pots at intervals of 10 days from now until the end of February. Pots 8 inches in diameter are suitable, and should be three-parts filled with rich soil. After the seeds are sown they should be covered with 1 inch of fine soil, and be placed near to the roof-glass in a house having a temperature of 50°. The plants should be supported by a few sticks, and the house ventilated freely to keep the shoots sturdy. Harbinger and Little Marvel are suitable varieties for growing in this way.

PLANTS UNDER GLASS.

By F. JENNINGS, Gardener to the Duke of DEVONSHIRE, Chatsworth, Derbyshire.

HELIOTROPES AND SALVIAS AS STANDARDS.—Plants of Heliotrope intended for training as standards may be raised from cuttings inserted singly in thumb-pots, and rooted in a frame in the propagating house. The frame should be opened slightly to admit air, otherwise the cuttings may damp off, as they are very susceptible to injury from excessive atmospheric moisture. After the plants are rooted, they should be taken out of the frames but may be still grown in the propagating house. When they have become hardened somewhat, they may be potted in 4½-inch pots, employing good loam and leaf-mould with a little sand. The main stems may be allowed to develop until they have reached a suitable height, when the plants may be shifted into 7-inch pots and transferred to a house having an intermediate temperature. Any flowers that develop should be pinched out to throw all the energies of the plant into making growth. The material for the final potting should consist of a mixture of loam, leaf-mould, decayed cow dung and fine bones. After the plants are established they may be fed each week with an artificial manure. An important point in the cultivation of Heliotropes in winter is to prevent the plants receiving a chill: in gardens in northern districts the plants should be grown in a house rather than a frame. Salvias may be treated in the same manner, with the exception that several cuttings may be rooted in the same pot. Salvias also require a cooler treatment than Heliotropes. Plants treated as advised will give good results next October and November.

ADIANTUM FERNS.—The plants should be examined at the roots to see that the drainage is in proper order, and the roots top-dressed with a compost consisting of loam, leaf-mould,

sand, mortar rubble, and wood ashes: a little peat may be added, but it is not essential, and a few broken crocks are an advantage. Ferns require large quantities of water during the summer months, and the soil should never be allowed to become absolutely dry at any time, hence the importance of efficient drainage, for a water-logged or sour soil is fatal to success. The stock may be increased by dividing the old plants, and potting suitable portions in the same mixture as advised above. It is the practice of some growers to remove all the fronds and keep the roots dry at the end of the season with the object of giving the plants a rest. I do not advise this practice, as it is undesirable to remove any of the green leaves. After the potting is finished syringe the plants until the new fronds appear, when the roots should be soaked thoroughly with water. At that stage the plants should be grown in a temperature of 60° to 65°, and be well shaded until growth is completed. Afterwards they should be inured to a lower temperature that the fronds may become hardier. Pteris Ferns may be treated in much the same manner as Adiantums.

HYDRANGEA HORTENSIS.—Plants raised from cuttings inserted in the autumn and growing in 4 or 4½-inch pots should be afforded a temperature of 50° to 55°. Feed the roots with liquid manure made from cow dung, and, if the plants are kept growing healthily, flowers may be expected at the end of May or the beginning of June.

TREE CARNATIONS.—Plants raised from cuttings inserted in the autumn and potted afterwards in thumb-pots may, provided they were stopped at an earlier date, be potted in 4-inch pots in a mixture of rich loam, leaf-mould, coarse sand, and a small quantity of wood ashes. The loam should be passed through a sieve having a ¾-inch mesh. It is not necessary to remove the fine particles of loam, but all the materials should be well mixed together. Pot firmly, water the plants thoroughly, and stand them close to the roof-glass in a house having a temperature of 60° to 65°. If red spider is detected when potting the plants dip the foliage in a weak solution of nicotine. Admit air on all favourable occasions, and maintain at night a warmth varying from 55° to 60°.

FRUITS UNDER GLASS.

By JAMES WHYTOCK, Gardener to the Duke of BUCCLEUCH, Dalkeith Palace, Midlothian.

EARLY PEACHES. — The mild weather has been very favourable for the early forcing of Peaches and Nectarines, and the trees have set abundant crops. For the present, leave sufficient fruits on the upper sides of the branches to permit of a second thinning later on. The first disbudding having been done already, the work may now be completed, retaining on the upper sides of the branches two buds near to the base as well as the leading or terminal buds. On the under-sides of the branch leave two buds; the shoots from these may subsequently be shortened to three leaves. The minimum temperature may be 60°, rising to 75° with sun-heat. Should severe weather prevail, allow the heat to drop to 55° rather than resort to excessive firing. Syringe the trees on bright days, using occasionally a weak solution of some insecticide to destroy aphis and red spider. Do not overdo the syringing in cold weather, as this may cause the young fruits to fail. Provided the inside borders were in a proper condition of moisture at the time of starting the trees, and no water has been afforded the roots since, this matter will require attention. If the trees are young and growing vigorously clear water will suffice, but older trees, with medium, stubby growth, may be afforded a stimulant, using either drainings from a cow shed, suitably diluted, or an artificial manure dissolved in water. Promote atmospheric moisture by damping the paths and bare spaces.

PINEAPPLES. — The Queen variety is the best for summer fruiting, and plants which have been rested since November should be soaked at the roots with soft water warmed to the temperature of the house. The minimum temperature should be maintained at 65°, allowing a rise of 5° during the day; but when the sun is shining 10° higher than this will do no harm. If a hot-bed is provided to supply the necessary bottom heat fresh fermenting materials should be applied, but if hot-water pipes are employed for the purpose they should furnish a temperature of 85° to 90°. Do not syringe the plants for the present, but sprinkle the walls and paths two or three times daily, to promote a moist atmosphere. Water the plants with great care, and keep the soil moist, but not excessively wet, until the fruits make their appearance. Plants of Smooth Cayenne and Charlotte Rothschild varieties, intended for winter and spring fruiting, have been grown in a higher temperature and kept moister at the roots than the Queen Pines, but care must be taken not to overwater these plants, as a soddened soil may result in failure. When the fruits are swelling apply weak guano-water to the roots. The temperature should not be lower than 70°, and advantage should be taken during times of sunshine to close the house when the interior is very warm and moist.

EARLY VINERY.—The shoots of early permanent vines should be directed carefully towards the trellis work, drawing them a little at a time. Make a selection of the most suitable growths, and remove all the others. The flowers may now be seen, and at this stage the night temperature should range from 60° to 65°, but do not resort to too much firing. When the sun is shining the temperature may rise 10° to 15° with safety. Air should be admitted early every day, even in cold weather, more or less according to the conditions. Damp the paths and bare spaces two or three times daily, sprinkling only sufficient water to promote a medium amount of atmospheric moisture.

THE FLOWER GARDEN.

By EDWARD HARRISS Gardener to Lady WANTAGE, Lockinge, Berkshire.

LAWNS.—The appearance of lawns will be very much improved by rolling them occasionally. They will also need an occasional sweeping, but this must be done when the grass is dry. Lawns sometimes need a stimulant; if the weather continues mild, there is no better time than the present to apply a dressing of some fertiliser. Artificial manures may be used with good results, but where these cannot be obtained dress the turf with loam, mixed with well-rotted cow manure. Wood-ashes mixed with loam also have a stimulating effect on grass, but whatever materials are used, they should be first passed through a screen. If it is intended to make new lawns, the ground should be prepared at once, so that it may become settled again before the turf is laid in position or the seed sown. One or two heavy showers will be sufficient to expose hollow places in the ground. These should be made level before the turf is laid. Worms are very troublesome on lawns at this season of the year, but they may be destroyed by applying quicklime dissolved in water.

THE ROCKERY.—Certain of the stronger-growing plants need restricting periodically or they may smother smaller, choicer subjects. If this is done at regular intervals and carried out with due regard to the natural habit of each species, unsightly gaps will be avoided. After this work is done, it will be found that some of the roots are exposed, and these should be top-dressed with fine compost; indeed, it will be beneficial if fine soil is sprinkled over the whole surface. Numerous small-growing, spring-flowering bulbs, including Scillas, Muscari, Chionodoxa, certain of the dwarf-growing Irises, Snowdrops, Anemones, and species of Narcissi, may be employed effectively on rockeries. Most of these bulbs may be planted now.

BEDDING PLANTS IN FRAMES.—Admit air to the frames whenever the weather is suitable, and on very favourable occasions the lights may be removed entirely for a few hours. Examine the plants at regular intervals and remove decayed leaves. Pinch out the flowers from Antirrhinums rooted from cuttings inserted last autumn, and, if they promise to grow very tall, stop the leading shoots. Preparations must soon be made for shifting the plants, as they will require increased room. If they are growing in boxes, they may be transplanted into shallow beds of soil in temporary frames. Pentstemons may be treated similarly. Plants of Veronica Andersonii variegata, intended for standards, may be potted and grown on in a moderately warm house. The plants are very effective when interspersed in beds of scarlet Pelargoniums or Salvia Glory of Zurich. In sheltered situations this Veronica is almost hardy, and in these gardens plants growing in groups on the banks of an ornamental brook are at present unharmed by frost. They were planted last summer, and have been very beautiful all through the winter.

GEUM MRS. BRADSHAW.—This variety is probably the most effective of all the Geums. Plants may be raised readily from seeds, so that the variety is suitable for bedding purposes. The seeds should be sown in July as soon as they are harvested. If the plants are potted in rich soil, they will continue in flower in the beds during the greater part of the summer.

THE FRENCH GARDEN.

By PAUL AQUATIAS.

THE WEATHER.—The short spell of bright, cold weather greatly facilitated the different operations in the French garden. Manure also ferments better when there is not much moisture in the atmosphere, whilst the crops, owing to their proximity to the glass, become hardier and healthier. The making of the hot-beds should be completed as soon as possible, and, in the last week in January, the paths between the frames should be filled with dry, short manure. Make tidy the whole batch of beds, so that those intended for crops under cloches may be ready early in February.

COLD BEDS.—The planting of the Lettuces in heated and unheated frames has set at least one-third of the number of cloches at liberty. These may be employed for both the hot and cold beds. The plot of ground intended for the growing of crops without heat having been prepared previously by heavy manuring and deep digging, should be marked out into beds 4 feet 6 inches wide with 12-inch paths between them. Make the surface fine and cover it with a layer of black soil 3 or 4 inches thick. Seeds of Radish and Carrots Chantenay, Early Nantes or Altrincham should be sown very thinly and covered with fine soil. Set three rows of cloches on every bed, allowing a space of half an inch between the cloches in the row to facilitate tilting them when the work of planting and cleansing is in progress. On the first fine day the following plants may be planted, according to their requirements:—(a) Four Lettuces Little Gott, with one Cos Lettuce in the centre; (b) three Lettuces White Passion, with one Cos Lettuce in the centre; (c) three Lettuces White Passion with one Cauliflower.

HOT-BEDS FOR CLOCHES.—Where a continuous supply of produce is required hot-beds for cloches may be formed in the spaces between the heated and unheated frames. The crops will be of a better quality owing to their maturing later in the season. But the work entails numerous details, and many do not, in consequence, practice the system, although, with proper management, the results compensate for the trouble. The beds are made of long strawy manure, one-fourth of fresh and three-fourths of dry dung; a layer 9 inches thick is sufficient. Build the outsides of the beds carefully, and form a path 11 inches wide between the beds, which are 4 feet 6 inches across. When each bed is completed place the black soil in the centre in a ridge. Where labour is plentiful and the manure at hand, a batch of eight beds sufficient to accommodate 1,000 cloches may be prepared in four days. Level the soil and place the cloches in three rows per bed, allowing a good space between the glasses for tilting them. Before setting the cloches in position make a thin sowing of Carrot Bellot or Chantenay, and cover the seeds with fine soil. A few days afterwards set two Lettuces Little Gott under each cloche on the south side, and one very strong Cos Lettuce in the centre. The plants must be set firmly and deeply. The following week plant one Cos Lettuce in the space between each cloche on the side facing south. A second Cos Lettuce should be planted in the space on the north side, but not if Carrots have been sown or when a crop of Cos Lettuces is grown in the cold beds, as the two crops would be ready at the same time. Keep the paths between the beds level during the whole season, filling them with well-broken and dry manure as often as necessary.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS, 41, Wellington Street, Covent Garden, London.** *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

Special Notice to Correspondents.—*The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

Illustrations.—*The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable plants, flowers, trees, &c., but they cannot be responsible for loss or injury.*

Newspapers.—*Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see.*

APPOINTMENTS.

SATURDAY, JANUARY 25—
Lea Valley & Dist. Nurserymen's and Growers' Assoc. Ann. Dinner.

MONDAY, JANUARY 27—Surveyors' Inst. meet.

TUESDAY, JANUARY 28—
Royal Inst. meet. (Lecture by Prof. W. Bateson, F.R.S.)

FRIDAY, JANUARY 31—
Royal Inst. meet. (Lecture by Mr. George M. Trevelyan.)

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich—39·5.

ACTUAL TEMPERATURES:—
LONDON.—*Wednesday, January 22* (6 P.M.) Max. 41°; Min. 33°.
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—*Thursday, January 23* (10 A.M.): Bar. 29·3°; Temp. 52°; *Weather*—Dull.
PROVINCES.—*Wednesday, January 22:* Max. 52° Cork; Min. 35° Boston.

SALES FOR THE ENSUING WEEK.

MONDAY, TUESDAY, WEDNESDAY, THURSDAY, FRIDAY AND SATURDAY—
The remaining Nursery Stock at the Nurseries, South Woodford, by order of Mr. John Fraser, by Protheroe & Morris, at 11.30.

MONDAY AND WEDNESDAY—
Rose Trees, Fruit Trees, Shrubs, Lilies, &c., at Stevens's Auction Rooms, 38, King Street, Covent Garden, at 12.30.

MONDAY AND FRIDAY—
Herbaceous and other Plants, Liliums and Hardy Bulbs, at 12; Roses and Fruit Trees, at 1.30; at 67 & 68, Cheapside, E.C., by Protheroe and Morris.

WEDNESDAY—
Herbaceous Plants and Perennials, Lilies and other Hardy Bulbs, at 12; Special Sale of Roses, also Fruit Trees, at 1; Palms and Plants at 5; at Protheroe & Morris Rooms.

FRIDAY—
Orchids, at Protheroe & Morris Rooms, at 12.45.

The Fruits of the East.

Many years ago the late Dr. Trimen told the present writer that Sir Joseph Hooker exclaimed, with humorously affected impatience, in the course of a conversation on the several merits of Mangoes, Mangosteens and Durians, that "no tropical fruit is worth eating." To the epicure, whose thoughts turn to iced Mangoes, and to those who can enjoy the somewhat meagre Mangosteen, such a wholesale condemnation of the fruity treasures of the East will savour of sacrilege. Nevertheless, when the first Strawberries are before him, when he bites into the pulp of a Pineapple in perfect condition, when his teeth close on the frosty crispness of a good Pear, or even when he—following Darwin's advice to Huxley's children—is good and takes large mouthfuls of, let us say, a Cox's Orange Pippin Apple, the gourmet will be disposed to agree in a general way with Hooker's dictum. The Mango, even at its best, savours of turpentine, the pulp of the Mangosteen gives of its sweetness but grudgingly, and the Durian, that massive five-pound fruit of many flavours, has an odour which, if not exactly that of civet cats, as its trivial name, Zibethinus, would imply, demands of the eater who would enjoy the fruit either very blunt olfactory organs or a palate so keen as to put, when it is exercised, the nose quite out of action. Of one fruit at least the Eastern traveller home returned retains a grateful memory, and that fruit is the Banana. He recollects journeys not a few under a tropical sun and the thirst engendered, a thirst not to be assuaged by drinking but only by the fresh cut fruit of the Banana, lit upon in the course of the march and plucked by a nimble coolie from its tree.

As is but natural, however, there is no standard except the personal one whereby the several savours of temperate and tropical fruits may be appraised. Wallace long ago extolled the Durian—"to eat a Durian is a new sensation worth a voyage to the East to experience"—and as Mr. O. W. Barrett, chief of the Division of Horticulture in the Philippine Islands, reminds us in the Philippine *Agricultural Review*, the Dutch botanist, Linschoten, declared three hundred years ago that the Durian surpasses in flavour all other fruits of the world. Mr. Barrett himself is somewhat cautious in his judgment of the merits of the Durian. It is significant, for instance, that he gives prominence to the fact that it is a large fruit. Of its full five pounds, one third is edible pulp. But for our part we are inclined to think that excellence of flavour stands in inverse ratio to size. A bunch of Chasselas Grapes plucked from a vine near Mâcan appeals more to our palate than the finest and most massive bunch of Black Hamburgh that gains the premier award at any horticultural show. Apples and Pears, we grant, are exceptions to this rule—if rule it be. But only apparently; for small Apples and Pears are as unnatural to cultivated trees as are huge berries to fruitful vines.

Mr. Barrett's description of the flavour of the Durian will enable the reader who has not tasted that fruit to form an opinion as to the appeal which it is likely to make to him—"a multiple-flavoured aromatic custard with a soupçon of turpentine." It is in truth that soupçon of turpentine which lingers in our recollection and makes us pay but a grudging tribute to the Durian. We admit that the tree is stately, that the spiny fruits are imposing, that when they fall they are apt to prove deadly artillery to any head that happens to receive them. We admit that the Malayans relish them and that Europeans in the East grow inured to the enjoyment of their esoteric savour; but for our part, now that we are home again, we cannot but think that the Durian is a fruit for a Gargantuan feast or for a supper in a nightmare, and we are content in these wintry days to found our hopes of enjoyment on the home-grown early Strawberry, and whilst we await its advent to eat with gratitude a choice late-keeping Apple. Thanks, however, to the energetic way in which the Agricultural Department is exploiting the resources of the Philippines, new eastern rivals to our tropical fruits are being discovered. Of these parvenus Mr. Webster describes in the journal already cited the Baúno (Mangifera verticillata) "with white flesh, very juicy, rich, sub-acid, quite aromatic, of excellent flavour, partaking somewhat of the flavour of Apricot": Juany (Mangifera obovata)—one fruit of which will perfume a house—might achieve a character for flavour were it not for its excess of turpentine. Marang (Artocarpus odoratissima), unlike the somewhat unsatisfactory bread fruit (Artocarpus jucisa), has a sweet, rich, aromatic fruit of good flavour. Nor does this list complete the inventory of promising fruits growing in the Philippines; so if we remember that, as yet, Mendelism and tropical fruits have not been introduced to one another we should be foolish not to recognize that the East may yet have surprises in the way of luscious fruits in store for the coming generation of epicures.

Migration of Mineral Substances from Leaves.

Inasmuch as all the mineral substances contained in a plant are derived from the soil, and inasmuch as they are carried mainly in the transpiration stream from the roots to the leaves, it follows that actively-transpiring leaves contain large quantities of mineral substances. During its active life the green leaf, which is the chief chemical laboratory of the plant, makes use of many of these mineral substances which undergo change and may be transported to other growing parts of the plant. But when the life of a green leaf wanes in autumn its synthetic powers wane also, hence the question arises: Are the accumulated mineral substances locked up in the autumn leaf returned to the soil when the leaf falls, or is there a migration of mineral substances from the leaf to other parts of the plant?

The question has given rise to no small amount of investigation, which in turn has led to the conclusion that a migration of mineral matter from the leaf does actually occur in autumn.

According to the most recent researches conducted by E. Ramann* this conclusion is correct. Analysis of the ash of the leaves and other parts of Beech, Birch and Oak, and other plants shows that during the autumn nitrogen compounds, in particular, disappear from the leaves and accumulate in other parts of the plant. A similar migration of calcium salts and of phosphates may also take place, but whereas the dying leaf tends, as a rule, to lose its phosphates, it may actually accumulate calcium compounds. Indeed, in some cases the amount of calcium salts, and also the silica contained in the dead leaf may be twice as great as in the normal green leaf. The migration appears to take place rapidly, and is completed in the relatively short time between the autumnal colouring and the death of the leaf.

The well-known fact that the leaves of certain plants, Oak and Beech for example, make better leaf-mould than do the leaves of other plants, may be connected with the fact that in the former plants the leaves retain more of their nitrogen and phosphorus-compounds than do the leaves of other trees.

* (*Landw. Versuchsstation*, 76, p 157, 1912).

Coloured Supplement. — Our Supplementary Illustration depicts a rose-pink variety of the well-known Anemone pulsatilla. We are informed that it is derived from a sport which appeared in the Royal Tottenham Nurseries, Holland, in 1904. At first, half of the plant produced blue and the other half pink flowers, and it had a tendency to revert to the blue colour towards the end of the flowering. Seeds were saved, and by selecting seedlings which showed the best pink colour year after year the variety illustrated was obtained. Seedlings have still a tendency to revert to the blue colour, and they present infinite variation of colours. Some are almost wine-red, others are more or less pink, others blue striped with red or pink. The variety "Mrs. Van der Elst" was shown at one of the meetings of the Royal Horticultural Society in March, 1912, and gained an Award of Merit from the National Hardy Plant Society on March 21 last.

LINNEAN SOCIETY.—The next general meeting will be held on Thursday, February 6, at 8 p.m. Exhibitions and papers:—1, Mr. ARTHUR W. SUTTON, crosses of a wild Pea with cultivated types; 2, Miss N. BANCROFT, Rheoxylon africanum, a new Medullosean stem; 3, Dr. ROGER VERITY, "Revision of the Linnean Types of Palæarctic Rhopalocera," communicated by the President.

AWARDS BY THE VEITCH MEMORIAL TRUSTEES.—A meeting of the Veitch Memorial trustees, including Mr. CHARLES E. SHEA (in the chair), Sir HARRY VEITCH, and Messrs. O. THOMAS, J. HUDSON, and R. HOOPER PEARSON, took place on Tuesday last, when the following awards were made:—Inscribed medals to Messrs. ADNITT and NAUNTON, late secretaries of the Shropshire Horticultural Society, to signalise their successful efforts in promoting horticultural exhibitions in Shrewsbury during a period of 38 years, and a silver medal to be awarded for the best exhibit of Dahlias by an amateur at a show to be held by the National Dahlia Society next autumn in the Royal Horticultural Society's Hall, Vincent Square, Westminster. In addition to these awards, it was agreed to grant a sum of £100 to the scheme for the reprinting and bringing up to date of Dr. A. G. PRITZEL's *Botanical Index*.



[*Photograph by R. A. Malby, F.R.P.S.*

FIG. 29.—ANEMONE NARCISSIFLORA IN A SWISS ALPINE GARDEN.

(See p. 52)

SWEET PEA TRIALS, READING.—Mr. WALTER P. WRIGHT informs us that an excellent response has been made to his invitation to Sweet Pea raisers to submit stocks for trial at Reading University College this year. It is hoped to revive the palmy days of the Sweet Pea trials at Reading, which were conducted in past years under the superintendence of the late CHARLES FOSTER, and the chairmanship of Mr. WRIGHT. Mr. HORACE J. WRIGHT has consented to act as chairman of the awards committee. Communications respecting the Reading trials may be addressed to Mr. WALTER P. WRIGHT, The Grey House, Lyminge, Folkestone.

KEW GARDENERS. — The sixteenth annual social gathering of the gardeners of the Royal Gardens, Kew, was held on the 10th inst. in the Boat House, Kew. The party numbered about 140, and included several former members of the garden staff. Mr. SYMONS officiated as master of the ceremonies and Mr. G. C JOHNSON as hon. secretary.

NURSERY EMPLOYÉS ENTERTAINED. — The employés of the Eaglescliffe Nurseries, Yarm, were entertained by the proprietor, Mr. W. LAWRENSON, at supper on the 14th inst., upwards of 40 being present. Mr. LAWRENSON stated that one of his workmen had been in his employ for nearly 40 years, another for 25 years, and three for 20 years.

MR. HENRY PERKINS.—Mr. PERKINS, head gardener to the Hon. F. W. D. Smith, at Greenlands, Henley-on-Thames, is retiring from the post in March next. Mr. PERKINS has served at Greenlands for a period of 30 years. We understand that a successor has been appointed

PREPARATIONS FOR THE GHENT QUINQUENNIAL.—The preparations for the Quinquennial Horticultural Exhibition at Ghent are proceeding apace, and the large building in which stove plants are to be exhibited is being adapted for the purpose under the supervision of M. FRED. BURVENICH, senior. We give below the names of the English members of the jury:—H. G. Alexander, Westonbirt, Tetbury; J. Backhouse, York; Prof. Bayley Balfour, Edinburgh; J. S. Brunton, Burnley; Sir J. Colman, Reigate; C. H. Curtis, Brentford; R. G. Cuthbert, Southgate; W. Cuthbertson, Edinburgh; De B. Crawshay, Sevenoaks; J. Ebblewhite, London; C. Engelmann, Saffron Walden; Dr. Bretland Farmer, Gerrards Cross; Robt. Findlay, Glasgow; Geo. Gordon, Kew; J. J. Guttridge, Liverpool; J. Heal, Chelsea; J. Hudson, Gunnersbury; Robt. Ker, Liverpool; F. W. Keeble, Reading; Stuart Low, Enfield; A. Mackellar, Windsor; Sir Fredk. Moore, Dublin; Jas. O'Brien, Harrow; W. H. Page, Hampton; G. Paul, Cheshunt; C. Harman Payne, Catford; Chas. Pearson, Lowdham; R. Hooper Pearson, London; H. T. Pitt; Lieut.-col. Sir David Prain, Kew; Lord Redesdale; Thos. Rochford, Broxbourne; F. Sander, St. Albans; S. M. Segar, London; Arthur A. Sutton, Reading; C. H. Taudevin, Cheltenham; A. Turner, Slough; P. C. M. Veitch, Exeter; Sir Harry Veitch, London; W. Watson, Kew; J. Wilson, Haywards Heath; Jas. Whitton, Glasgow; and Brian Wynne, London.

THE LOSS OF NITRATES FROM THE SOIL.—It has been known for many years that certain soil-bacteria decompose nitrates and liberate ammonia. It is also a well-known fact that Chili saltpetre (nitrate of soda) is readily washed out from a soil. Quite recently I. VOGEL, as reported in the *Bot. Centralblatt* (No. 49, 1912), has shown that nitrates in the soil may undergo decomposition quite apart from bacterial action. This observer shows that if soil is spread in very thin layers and if it contains a certain amount of water—from 15 to 20 per cent.—decomposition of nitrate ensues to such an extent that the loss of nitrogen may amount to so much as 80 or 90 per cent. The nitrate is decomposed, free nitric acid appears in the water, the sodium is combined to form carbonate, and if the soil be rich in humus, compounds of nitrogen other than nitric acid are also formed. As a consequence of the formation of carbonate of soda, the physical character of the soil is altered materially. It will be evident that these observations have a definite practical bearing, for it would appear from them that, given certain conditions of the soil, a dressing of nitrate might fail to produce its stimulating effect, owing to this rapid decomposition and the consequent loss of nitrogen. It is to be hoped that further investigations will be made into this important subject.

PACKING PALMS FOR EXPORT.—The following simple method, described in the *Journal d'Agriculture Tropicale* (No. 137, November, 1912), has been used with success for the transport of Palms from one country to another. A cage capable of containing a Palm is built. The roots of the Palm are washed thoroughly, covered loosely with damp moss, and then wrapped in oil paper. The Palm is fixed in its cage, and the latter is covered first with oiled paper and then with light calico. This method, devised by Mr. EVANS, of the Trinidad Botanic Gardens, has been tested, and has proved successful. Of 15 Palms sent from Trinidad to Sweden, all arrived at their destination in a perfectly healthy state. Those who deal in valuable shrubs and the like might find it worth while to adopt the method, which preserves the roots from desiccation and from cold

HORTICULTURAL CLUB.—The annual general meeting of the members will be held in the club-room at the Hotel Windsor on Tuesday, February 4, at 5.30 p.m.; the annual dinner will take place at 6.30 p.m. The proceedings will be interspersed with a musical programme provided by the President. Sir FRANK CRISP, Bart., will preside at both meetings. Mr. R. HOOPER PEARSON, hon. sec., will be glad to hear from members desiring to be present at the dinner.

THE ORIGIN OF CULTIVATED TULIPS.—From his studies of the wild Tulips of Asiatic Russia and the Caucasus, P. MISCENKO (*Bot. Centralblatt*, No. 50, 1912) concludes that Tulipa suaveolens and T. Gesneriana are the parents of cultivated Tulips. T. suaveolens is to be found in the high-lying parts of the mountain range of Hissar, and has been collected also from the Sarawschan. The form from the Caucasus and the Crimea described as T. suaveolens is T. Schrenkii Rgl., and is not one of the prototypes of cultivated Tulips, although it responds well to cultivation, shows considerable variation, and promises well. South Russia, the Caucasus, and Asia are the home of T. Biebersteiniana Schult, which, together with T. sylvestris, occurs also in Daghestan.

TENTH INTERNATIONAL CONGRESS OF AGRICULTURE. — The committee, which has been formed from representatives of several of the principal agricultural institutions of this country for the purpose of securing adequate British representation at the 10th International Congress of Agriculture, to be held at Ghent, Belgium, from June 8 to 13 next, is making an appeal for adherents to this important congress, and also for the contribution of papers on agricultural subjects. The subscription for members, who will receive the publications of the Congress gratuitously, and have the right of taking part in the discussions, has been fixed at 20 francs (16s.). The secretary of the British Committee is Mr. H. CHAMBERS, Craven House, Northumberland Avenue, London.

CHICORÉE DE BRUXELLES.—In the past 60 years there has been a wonderful development in the cultivation of Chicory or "Witloof" in Belgium. The extent of this development may be gauged from the following figures, published by the *Revue de l'Horticulture Belge et Etrangère* (No. 23, December, 1912). The method af cultivation is simple. Roots for forcing are taken from a special variety of Chicory. The roots, after being raised in October, are planted in shallow trenches about a yard wide and long. A layer of good soil, some 16 inches deep, is spread over the roots, and later on, when forcing is to be begun, manure, to a depth of from 1½ to 3 feet, is spread over the soil. Recently this manure has been dispensed with, and heat is supplied by thermosyphons, or by means of smoke pipes (conduits de fumée). Production extends from October to April. The total export of Chicory—mainly to Paris—has reached the colossal amount of seven million pounds. Of the total exported, Paris takes over five million pounds and the United States, whence the Chicory is transported in cold storage by the Red Star Line, about half a million pounds. Week by week during the season thirty thousand pounds are despatched to London. The trade is carried on also with Germany, Holland, and Switzerland. The Belgian producers cooperate with one another, and are grouped into 15 syndicates, which groups have done much in the way of opening and extending markets. Each producer sends his Chicory to the nearest station packed in panniers bearing his number, and the subsequent distribution is carried out by the syndicate. "Good numbers" soon acquire a reputation and command good prices.

PUBLICATIONS RECEIVED.—***The Violet Book,*** by A. & D. Allen-Brown. (London: John Lane.) Price 5s. net.—***Practical Agricultural Chemistry,*** by S. J. M. Auld and D. R. Edwardes-Ker. (London: John Murray.)

FOREIGN CORRESPONDENCE.

HOURS OF LABOUR IN FRANCE.

I READ with interest the experiences in France of *An English Gardener in Germany* (see p. 44). I can quite understand your correspondent finding it hard to work 11½ hours daily with no half-day free on Saturday. In the environs of Paris, not only is the Saturday half-holiday never so much as thought of, but even on Sunday most nurserymen keep their employees at work part or the whole of the morning.

At Versailles, where I am now working, the only entire holiday which we have in the year is New Year's Day. On every other public holiday and every Sunday we work from 6 till 9 in the morning in summer, and 7 till 9 in winter, doing any work that may be on hand. Besides this, two or three workmen are on duty in turns in the afternoon. In some nurseries the Sunday work lasts from 6 a.m. to 11 a.m.

The following is a statement of the hours of work in a market-garden near Paris, where forcing of Asparagus is practised on a large scale. All the year round the hours are from 5 a.m. to 7 p.m., with a half-hour in the morning for breakfast, one hour for lunch at midday, and a half-hour in the afternoon for a meal corresponding to the English tea, thus forming a total of 12 hours of work daily. On Sunday works lasts from 5 a.m. to 12 noon.

Readers may wonder if there is not a law enforcing the weekly rest day in France. I may answer that such a law does exist, but unfortunately it does not apply to our profession. However, as your correspondent justly remarks, there are certainly many things to be learned in a foreign country, and we must adapt ourselves to the ways of the inhabitants. When I first began to work on Sundays I felt rather discouraged, and thought even of giving up my place, but I am glad I stayed, as I have already learnt many things here. I do not desire to discourage Englishmen who may want to come to work in France, but merely wish to give them a knowledge of the true state of affairs. *G. Adrion, Versailles, France.*

MARKET GARDENING.

THE VALE OF EVESHAM.

MARKET gardeners and fruit growers in the Vale of Evesham experienced a bad season in 1912. Early Cabbages sold well, but the crop was not a heavy one. There was a short supply of green Onions, and the demand was good, but Radishes were a failure as many early plants were killed by late frosts. Asparagus was early, and yielded well all through the season; prices ruled high. Strawberries were a total failure, whilst Cherries were only a small crop. Gooseberries yielded an average crop, with fair prices, and Currants also were fairly satisfactory. The Plum crop, though light, was heavier than was anticipated, and although prices were not so high as was expected, the fruits sold well. Apples were a very partial crop, some sorts yielding well, others very badly. The prices realized have been quite satisfactory. The efforts of Mr. Eyres Monsell to remedy the effects of the decision in the case of Kedwell v. Flint have been watched with interest. This decision inflicts great hardships on market gardeners, and Mr. Monsell has endeavoured to get a Bill through Parliament which will nullify the effect of this decision. At the same time Mr. James Rowlands has endeavoured to get a Bill passed which will to a large extent legalise the Evesham custom. This is a highly contentious measure, and before the Standing Committee of the House of Commons it was seen that it would not be allowed to pass. In the end the President of the Board of Agriculture suggested that both measures should be withdrawn on his promising to introduce early in the New Year a Bill which will be almost identical with Mr. Monsell's. *Correspondent.*



[Photograph by R. A. Maloy, F.R.P.S.

FIG. 30.—ERINUS ALPINUS IN THE VAL DE NANT BOTANIC GARDEN, SWITZERLAND.

(See p. 52.)

SCOTLAND.

DEN OF MAINS PARK, DUNDEE.

SIR JAMES KEY CAIRD, Bart., has added to his munificent gift of a park at Den of Mains by purchasing about 113 acres additional, at a cost of £10,000, for enlarging the park. The total cost of Sir James Caird's generous gift will now be about £25,000.

COLONIAL NOTE.

THE GENUS MUSSAENDA.

THE new species of Mussaenda, M. Sanderiana, figured and described in *Gardeners' Chronicle* September 21, 1912, p. 228, is well distributed on the Gold Coast in the districts of E. Akim, Kwaku, and Ashanti. The plant often grows to a height of 10 or 12 feet here, and is very attractive, with its white petaloid sepals and orange-coloured flowers.

Mussaenda erythrophylla is also found distributed in the same districts, its habit of growth is the same as that of M. Sanderiana. The flowers are white with a ruby-coloured centre, and both flowers and petaloid sepals, which are red, are larger generally than in M. Sanderiana. In some instances I have noticed an extra sepal developed above the enlarged red sepal apparently to replace this.

Usually there are five sepals and petals. The veins on the under side of the leaf are reddish, and the stems are somewhat hairy. The natives call it "Damavam," and use the roots for medicinal purposes. *A. R. Gould, Curator, Agricultural Station, Kibbi, Gold Coast.*

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

THE TERM "HYBRID."—In the spring of last year those of us who saw the handbook of the National Gladiolus Society were told by Mr. Wilbur A. Christy, of Warren, Ohio, that there was no such thing as a hybrid Gladiolus, and that the use of the term is "contrary to all the established rules of breeding and outside the pale of correct botanical terminology," and yet, continues Mr. Christy, "this fallacy is made the basis on which to build reputation, work up a business, and acquire gain." I have been reading some recent works on heredity, published in this country (Britain), and instead of banning the term hybrid, the tendency seems to me to be to widen its use. Let me quote Lock's *Recent Progress in the Study of Variation, Heredity, and Evolution*: "Following the modern usage, we shall apply the term 'hybrid' to all individuals arising from a cross between parents which belong to distinct groups, no matter whether these groups are separated as distinct genera or species, or whether they are regarded as representing only different races or varieties. This wide interpretation of the term 'hybrid' has only recently been introduced." Punnett uses the term in his recent book *Mendelism 1911*, with reference to Sweet Pea crosses. Darbishire, *Breeding, 1912*, says "if half bear the dominant and half the recessive, it is a hybrid." Mr. Christy says "that the crossing of these varieties of Gladioli will not merit the designation 'hybridising,' nor will the products of such crosses be 'hybrids.' The terms are wrongly applied. These so-called 'hybrids' are simply cross-breeds and nothing more." Does Mr. Christy speak for American scientists or only for himself? *W. Cuthbertson, Edinburgh.*

A PRECOCIOUS SYCAMORE.—At Tyninghame, East Lothian, a large Sycamore (Acer Pseudoplatanus) in the courtyard is in full leaf. It is always in advance of other trees in bursting into growth, but never before has it been so precocious as this year. Here and there Thorns in hedges are green. In the garden, besides flowers that are abnormally early, Moutan Pæonies are to be found in leaf, whilst Montbretias, Iris xiphioides, Tulipa sylvestris, and other bulbous plants have already shoots several inches long. The earliness of vegetation is attributed to the hard frost in November, followed by a genial December. *R. P. Brotherston, Tyninghame Gardens. Prestonkirk, N.B.*

CARNATION PROPAGATION (see pp. 7, 89).—I agree in every detail with the methods of propagation recommended by your correspondents, but I cannot believe that the cuttings will root in 12 to 14 days. It is my experience that but few roots are formed in four weeks, and certain varieties require a much longer time. I should be glad to know the experience of other readers in the matter of rooting Carnations quickly. *Chas. F. Coates.*

MAGNESIA AND ROSES.—I was pleased to see the comprehensive article on Magnesia for Roses (see vol. lii., p. 481). I have been experimenting with this material and other things for some years with a view to finding if it is possible to secure for Roses immunity from mildew and other fungal pests. There are some Roses which seem practically immune, like Ulrich Brunner, and it occurred to me that if we could discover the exact chemical requirements of Roses, we might assist the weak varieties to emulate the example of the strong when the Rose is of sufficient merit to make its culture desirable. Magnesia in the light carbonate form increases the vigour of wood growth and of leaf parenchyma rapidly. Then an end comes to the efficacy. The plant does not grow further nor flower till it has restored its natural balance by more general cultivation and plumping up of the buds. Sulphate of ammonia alone does not touch this condition, but oxalic acid in dilution again produces stout, red buds and shoots to appear. Oxalic acid seems to possess a rejuvenating influence on Roses burnt by ammonia, and killed. Magnesia and oxalic acid both revive it again generally. I humbly hope and trust I am on the right track. *Frederic Kitley, Bath.* [The action of oxalic acid must be indirect and not due to its contribution to plant-nutrition. Oxalic acid is a poison, and it is doubtful if it is absorbed at all by the roots of plants. Nevertheless, it does not follow that its influence when applied to the soil is other than beneficial. The note by Mr. Kitley may be commended to the notice of workers engaged in experiments on soil sterilisation.—EDS.]

THE CORSICAN PINE (see p. 462, vol. lii, and pp. 28, 45).—I am sorry that Mr. Elwes is unable to take a more favourable view of this tree as a British subject, because few men are entitled to so much attention in matters pertaining to forestry. My experience thereof, however, differs materially from his, for in our humid atmosphere on the west coast and in cool soil (sharp loam overlying boulder clay) it comes as fast from seed and is as soon ready for planting out as Scots Pine. It is true that the young plants are not nearly so well furnished with roots



[Photograph by R. A. Malby, F.R.P.S.

FIG 31.—WAHLENBERGIA (EDRAIANTHUS) PUMILIO GROWING IN A SWISS ALPINE GARDEN.

(See p. 5'.)

stimulated excessively by manure in general and by carbonate of magnesia. Again, oxalic acid has its limits. Very young Rose cuttings I do not think will stand it, for, indeed, Rose cuttings root better put in round the margin of a pot containing an old Rose plant than if placed in fresh soil. But neither magnesia nor oxalic acid alone or together give immunity from mildew. Something must be added. I have tried carbonate of iron in combination with them, and the plumping up of buds and general improvement of health is very marked. Probably oxide of iron would do equally well, but the red earth of the healthy Oak-bearing coal measures is what I have tried to follow. Sulphate of iron appears not to be much good. I do not like its chilly action, which seems a bit sterile in its effect. But a combination of iron carbonate, light magnesia carbonate, sulphate of ammonia, and oxalic acid is markedly good. Just a teaspoonful of each in a two or three gallon pot is about the best quantity as arrived at by experiments to date. I think it tends to prevent mildew and induce good growth in the plants. I am also making a preparation of oxalic acid and Stockholm tar which I trust will be very good. The thing is that hitherto, if enough tar-water be given to cure the mildew, the plant is caused to suffer a severe check, though by no means necessarily as the Scots, rendering greater care necessary, both in transplanting and planting out. I ought to add that both Scots and Corsicans, when transplanted in the nursery, receive the stimulus of either bone-meal or kainit. In planting out, we certainly did lose a large proportion some years ago when that operation was undertaken in autumn; but since we took to late spring planting the percentage of loss has not been greater than with Scots. From the middle of April to the middle of May we have found to be the proper time for planting out Corsicans, that is, after growth has started. Mr. Elwes does not credit this tree with two of its invaluable qualities, namely, its late start in spring growth and its immunity, comparative or positive, from the attack of ground game. Neither does he take into account the greatly superior rapidity with which the Corsican outstrips the Scots when once established. Admitting that the wood of young trees is "valueless," that of young Scots is no better, though both may be rendered very useful by treating with creosote. Mr. Elwes's conclusion "that no tree can be profitable which requires over 60-70 years to produce good timber" goes far to limit British planters to Ash, Larch, Poplar, and Willow. Scots Pine certainly cannot be reckoned commercially ripe under 80 years, and it is better at 200. I agree with Mr

Elwes's estimate of the value of Thuya plicata (gigantea). Forty years ago the late Mr. Peter Lawson, of Edinburgh, told me he believed it to be the tree of the future. But is the timber worth much under 80 years old? Moreover, it is very subject to injury from spring frosts. We raised about 70,000 Thuyas from 15s. worth of seed, and planted a block of seven acres with them, 2-3 feet high. The ground was securely wired against rabbits, but practically the whole crop perished in a May frost. Several thousands planted on higher ground never turned a hair, and are now growing vigorously. The low ground has since been replanted with Sitka Spruce. *Herbert Maxwell, Monreith, N.B.*

GRAPE MADRESFIELD COURT.—I have two vines of Madresfield Court planted in an outside border, with Black Hamburgh and Black Alicante in the same vinery. I have adopted the same treatment as recommended by Mr. Crump (see p. 454, vol. lii), and for the past 12 years not a single berry has cracked. *Thos. Beeson, Headley Park Gardens.*

VARIEGATED RHODODENDRONS.—The notes on p. 487, vol. lii, have raised the question of variegated foliage in hardy Rhododendrons. The form most commonly met with in gardens is R. ponticum var. albo-variegatum, the leaves of which are irregularly edged, and sometimes streaked, with white. The plant is a somewhat poor grower, and is not often seen doing really well. The flowers are of a dull lilac-purple shade of colour, and it is charitable to pick them off as soon as they appear, the colours of flowers and leaves together not being at all pleasing. Another form not often seen is R. p. var aureo-variegatum which resembles the preceding, except that the variegation is yellow. In both of these forms the variegated parts of the leaves are liable to be burnt by the sun. In R. p. var. aucubæfolium the leaves are irregularly streaked, or occasionally spotted, with white or pale yellow in the centre. It is a fairly robust-growing plant, and probably a seedling from R. ponticum × R. catawbiense. The flowers are practically R. ponticum in colour and size, but the habit and foliage have a resemblance of the latter parent in them. We have a seedling form of R. catawbiense growing here in which the young growths are of a bright, golden-yellow colour, but the leaves burn as soon as they are developed, many of them also falling off, so that by the autumn there are only the young stems left half-clothed with rusty-looking foliage. With age the leaves become green or faintly spotted with yellow. The plant is merely a curiosity, and, like all other variegated Rhododendrons, is not worth cultivation. *J. Clark, Bagshot, Surrey.*

RIPENED FRUIT WOOD.—I am obliged to Mr. Lisney for his reply (see p. 28), but I fail to comprehend him. He agrees that fruit crops are better after a wet season, and yet he maintains that no one expects good results from fruit trees when light and sunshine, essentials to mature the wood, are absent. Furthermore, he admits splendid crops were obtained following the wet season of 1910. I would like to ask him is not the crop of 1911 sufficient evidence that ripe wood is of secondary importance? He also is obliged to admit the scarcity of fruit in 1912 was due to insufficiency of moisture. If he will refer to 1902 and 1903 he will find that the former season was a cold and sunless summer and the latter one of the wettest on record. There was little fruit in the season of 1903, owing to a sharp frost in the middle of May, although the trees promised well, but the fruit crops of 1904 were exceptional. The trees at present are in a very green and sappy state after the past season. Does Mr. Lisney contend, notwithstanding the good promise all round, that we shall get but poor crops? If he does, I can assure him he is wrong. I would sooner see them as they are than too hard and ripe. Why do some of the most successful fruit-growers cover the main stems of their wall fruit to keep the sun from drying the bark and stems, and stopping an even flow of sap if ripe wood is one of the essentials? I see Mr. Lisney is interested in summer pruning. Why cut away the wood Nature has provided the tree to bring forth its fruit in due season? Where fruit trees are grown as ornaments they have to be cut back, or perhaps a few dozen fruits are wanted for a special purpose. Does our friend fill his fruit room from the ornamental trees he prunes in the summer? When it is possible to obtain 14 bushels of fruit from one tree of good quality that is well fed and only thinned with a saw during winter, I might ask does summer-pruning pay? I know a trade grower who three years ago gathered 3,000 bushels of Apples, yet the pruning saw is the only tool he uses. I have always followed in the footsteps of the trade grower as near as possible; if it pays them who study £ s. d. it should also pay the private grower. *L. S. Small, Malshanger, Basingstoke.*

SOCIETIES.

ROYAL HORTICULTURAL.

JANUARY 21.—There was an excellent display of flowers, fruits and vegetables for a January exhibition at the meeting held on Tuesday last in the Society's Hall, Westminster. The exhibits of Orchids were remarkably good, and of the many novelties submitted to the ORCHID COMMITTEE for award, one received a First-class Certificate and five Awards of Merit. The exhibits in the floral section were of a varied nature; the principal subjects were Carnations, Pelargoniums, Ferns, Cyclamens, Begonias, forced shrubs and hardy plants. The FLORAL COMMITTEE recommended three Awards of Merit. The most important exhibit in the fruit and vegetable section was a collection of Oranges shown by Messrs. T. S. RIVERS & SONS, for which a Gold Medal was awarded. The FRUIT COMMITTEE made no award to a novelty.

Floral Committee.

Present: H. B. May, Esq. (in the Chair); Messrs. Chas. T. Druery, John Dickson, J. F. McLeod, G. Reuthe, R. Hooper Pearson, F. Herbert Chapman, John Green, W. J. Bean, R. C. Notcutt, W. A. Bilney, George Paul, W. G. Baker, W. P. Thomson, Chas. E. Pearson, Chas. E. Shea, F. Page Roberts, R. W. Wallace, R. G. Reginald Nevill, W. Howe, J. Jennings, E. A. Bowles, Jas. Hudson, W. J. James, J. W. Barr, Chas. Dixon, Arthur Turner and E. H. Jenkins.

Messrs. JAS. VEITCH & SONS, LTD., King's Road, Chelsea, showed indoor flowering plants, for which a Silver Flora Medal was awarded. The most conspicuous plants were Tillandsia Lindenii, the blue flowers being an intense shade, Freesias, set off by a row of the fine red-flowered Azalea Hexe, clumps of Lily-of-the-Valley, tall specimens of Senecio grandiflora, hybrid Rhododendrons, Eupatorium vernale and Cyclamens all found a place in this interesting exhibit.

Messrs. H. B. MAY & SONS, Edmonton, showed a collection of about 20 distinct sorts of Epiphytal Ferns. The choicer specimens were Nephobolus angustata, a species with long, lanceolate, densely-tormentose fronds; D. rupestris, which has smaller fronds; Drymoglossum carnosum; D. spathulatum; Davallia hetero phylla, in which the fertile fronds are pinnate and the others entire; D. pycnocarpa and Asplenium obtusilobum. (Silver Flora Medal.)

Messrs. SUTTON & SONS, Reading, again showed a splendid collection of Cyclamens. The well-grown plants were arranged in batches of their several varieties and provided a fine display of colours: Giant White, White Butterfly, Giant Crimson and Salmon Scarlet, a pretty shade, were especially good. (Silver Flora Medal.)

Mr. L. R. RUSSELL, Richmond, Surrey, filled a table with ornamental-leaved and berried shrubs and Azaleas. There was a large collection of Ivies, including the handsome Hedera Ilex dentata variegata, one of the most beautiful of the race. Garrya elliptica was shown in bloom, and there were excellent little plants of Aucuba in berry. (Silver Flora Medal.)

Messrs. H. CANNELL & SONS, Swanley, again showed bunches of Pelargoniums. At the back were plants trained as standards, with very large trusses, whilst in the centre was a batch of a new bedding variety named Sensation, with rosy-scarlet flowers.

Mr. W. A. MANDA, St. Albans, showed numerous plants of a dark-red flowered Begonia of the semperflorens type, basket plants of the variegated Chlorophytum (Anthericum) Mandianum, Polypodium Mandianum and Asparagus elongatus.

Messrs. R. GILL & SONS, Falmouth, showed Rhododendrons from the open garden and a batch of Primula Winteri. The finest of the Rhododendrons was Cornubia, a dark-red variety. There were trusses of R. argenteum, R. barbatum and R. cinnamomeum. (Silver Banksian Medal.)

Mr. F. SMITH, Coomb Court, Kingston Hill, Surrey, showed a pretty conservatory group of forced shrubs and bulbs, for which a Silver Banksian Medal was awarded.

Mr. H. BURNETT, Guernsey, showed varieties of Perpetual-flowering Carnations. The blooms were of fine quality; the varieties Scarlet Glow, Lady Alington, Carola, and Lady Northcliffe attracted special notice. (Silver Flora Medal.)

Messrs. W. CUTBUSH & SON, Highgate, showed excellent Carnations arranged on a platform carpeted with green cloth. This fine exhibit had as a centrepiece a bold vase of the scarlet variety Mrs. L. MacKinnon, and there were excellent blooms of White Enchantress, Miss Winnie Hay, Mrs. Waldorf Astor, and Rose Enchantress. The flowers were thrown into relief by Ferns and trails of Asparagus, with a background of tall Cocos Palms. This firm also showed numerous forced plants and seasonable Alpines in bloom. On a rockery we noticed fine clumps of Iris histrioides major, I. Danfordiæ, I. reticulata, and Saxifraga Boydii alba. (Silver Flora Medal.)

Messrs. STUART LOW & Co., Enfield, exhibited Cyclamens and Carnations in variety, for which a Silver Banksian Medal was awarded.

Other exhibitors of Carnations were: Messrs. ALLWOOD BROS., Wivelsfield Nurseries, Haywards Heath; Messrs. W. WELLS, LTD., Merstham, Surrey; and Mr. G. ENGELMANN, Saffron Walden. (Silver Banksian Medal.)

Mr. MAURICE PRICHARD, Christchurch, Hampshire, exhibited the most interesting collection of hardy plants. The plants were splendid specimens and finely-flowered. We noticed Anemone fulgens, a beautiful patch of scarlet; Hellebores in variety; Primula Cashmeriana, including the beautiful Riverslea variety, with pale violet flowers; Sisyrinchium grandiflorum album; Parochetus communis, with sky-blue blossoms; and a patch of Erica mediterranea hybrida. (Silver Flora Medal.)

Messrs. JOHN PIPER & SONS, Bayswater, exhibited a rockery. The most interesting plant was Hepatica triloba cœrulea plena, pretty, double, blue flowers, borne on long stalks. (Bronze Banksian Medal.)

The WARGRAVE HARDY PLANT FARM, Twyford, Berkshire, showed uncommon Alpines on a rock-garden exhibit. A prominent place was afforded a fine pan of Soldanella alpina, and at the foot of this was the interesting Mazus rugosus. Other subjects in bloom included Arabis rosea, Cyclamen ibericum, and Iris reticulata var. histrioides. Paronychia Kapela is a dwarf, woody trailer. (Silver Banksian Medal.)

Messrs. R. WALLACE & Co., Colchester, were awarded a Silver Banksian Medal for hardy plants. Coloured Primroses were very good, and there was a choice selection of Crocuses, Fritillaria citrina (with greenish-yellow flowers), F. chitralensis (with handsome bells of pale-yellow colour), and I. reticulata.

Messrs. G. & A. CLARK, LTD., Dover, showed coloured Primroses, for which a Bronze Banksian Medal was awarded.

Messrs. BARR & SONS, King Street, Covent Garden, showed numerous hardy plants in flower. A large group of Cyclamen ibericum seedlings, a fine variety of Primula obconica named Rose Queen, Crocus Imperatii, Iris Haynei, resembling a small I. Susiana, a seedling of N. Cyclamineus, and Freesias were the principal subjects.

Mr. CLARENCE ELLIOTT, Stevenage, exhibited a well-designed rockery, on which were growing Saxifraga burseriana, Eranthis cilicicus, Primula Winteri, and numerous dwarf Conifers. (Silver Banksian Medal.)

The Misses HOPKINS, Mere Gardens, Shepperton, exhibited a rock-garden.

Hardy plants were also exhibited by Mr. JAMES BOX, Lindfield; Mr. G. REUTHE, Keston (Silver Banksian Medal); Messrs. JOHN PEED & SON, West Norwood; T. S. WARE, LTD., Feltham (Silver Banksian Medal); and Messrs. WHITELEGG & PAGE, Chislehurst.

AWARDS OF MERIT.

Narcissus Minicycla (*N. cyclamineus* ♀ × *N. minimus* ♂).—This is a dainty little hybrid, intermediate in character between the parents. It has the long, narrow trumpet of N. cyclamineus, but it is frilled and expanded at the mouth as in N. minimus. The flower is more drooping than in the latter parent, but the segments of the corolla are wider and less recurved than in N. cyclamineus. The height is about 5 inches, and the foliage is greener, broader, and longer than in N. minimus, but the hybrid is more erect, and less ribbed down the back than N. cyclamineus. Shown by Mr. HERBERT CHAPMAN.

Cyclamen "*St. George.*"—A strain of C. latifolium, in which the leaves are edged to a depth of half-an-inch or more with a clearly-defined band of silver. The variegation is extremely pretty, though somewhat variable, and resembles a silver-edged variety of Begonia Rex. The flowers were salmon-pink, but their brightness rather detracted from the beauty of the foliage, which was best developed in the unflowered seedlings. Shown by the ST. GEORGE'S NURSERY Co.

Rose Mrs. Charles Russell (see fig. 32).—A large rose-pink variety, tinged with purple: the bloom possesses great substance and good form. It is a Hybrid Tea variety, but shows a strong leaning, in the dull-green foliage and vigorous habit, towards the Hybrid Perpetuals, whilst it is strongly scented. The award was given to a vase of blooms which had been cut in the United States, and had not even been placed in water on the voyage. Fresh blooms are said to be less purple-tinted, almost a clear pink, and the habit and vigour to resemble American Beauty. The cut stems were strong and straight, and 2½ feet in length. Shown by Mr. W. A. MANDA.

OTHER NOVELTIES.

Messrs. BARR & SONS showed Crocus E. A. Bowles, a seedling of C. chrysanthus, raised by Mr. Bowles. The expanded flower is a soft, uniform yellow, with broad, firmly textured segments. The small stigmata give a delightful touch of scarlet in the centre. The tube is shaded olive, which develops into a small blotch at the base of the outer segments, and then feathers slightly upwards. C. chrysanthus Warley, is of slighter build, with white, yellow-throated flowers, shaded outside with purplish-blue.



FIG. 32.—ROSE MRS. CHARLES RUSSELL: COLOUR ROSE-PINK.
(R.H.S. Award of Merit on Tuesday last).

The rare Fagus fusca, an evergreen Beech from New Zealand, was shown by Mr. G. REUTHE. The plant is of twiggy growth, and has small, ovate leaves, less than half-an-inch long. The name is derived from the brown colouring of the leaves. The species is figured in Hooker's *Icones Plantarum*, 1844, t. 630-1.

Miss WILLMOTT showed flowering shoots of Amygdalus warleyensis. The species makes an open bush some 6 feet in height, with slender, dark-brown twigs. The flowers are about three-eighths of an inch in diameter; the pinkish-white petals are one-sixth of an inch in length by half that in breadth, and the calyx is reddish and finely toothed. The flowers are not showy, but they are borne freely in twos and threes on leafless wood of the previous year. It was raised from seed collected some 30 years ago, but the origin of the seed was not recorded, and the species has not been identified at Kew.

Miss WILLMOTT also showed flowers of Dombeya (Astrapæa) Wallichii. They are intense carmine, clustered, and sessile in a dense, umbellate head (suggesting Hæmanthus in the distance, although the genus belongs to Sterculiaceæ), and a brilliant effect is given by the numerous protruding yellow stamens. The species is figured in Lindley's *Botanical Illustrations of Rare and Curious Exotic Plants*, 1821 (tab. 14), and is described as "one of the most superb plants in the world."

Orchid Committee.

Present: Sir Harry J. Veitch (in the Chair); Messrs. Jas. O'Brien (hon. secretary), de B. Crawshay, J. Wilson Potter, Gurney Wilson, R. G. Thwaites, F. J. Hanbury, R. A. Rolfe, A. McBean, C. H. Curtis, J. Charlesworth, J. Cypher, J. E. Shill, H. G. Alexander, W. P. Bound, A. Dye, W. H. White, Stuart Low, W. Bolton, J. S. Moss and T. Armstrong.

Lady WERNHER, Luton Hoo (gr. Mr. Metcalfe), was awarded a Silver Flora Medal for a very fine group of Calanthe Regnieré, with occasional plants of C. Baron Schröder, the variety albescens having an inflorescence half an inch across at the base and over 4 feet in height. The whole group showed what cultural skill can accomplish. Lady WERNHER exhibited the deep-rose C. Vulcan at the last meeting.

Messrs. CHARLESWORTH & Co., Haywards Heath, secured a Silver Flora Medal for an effective group, in which the fine sprays of Odontoglossum ardentissimum, including the pure-white form; O. Wilckeanum, O. Lambeauianum, and other hybrids, were tastefully arranged with scarlet Odontioda keighleyensis having branched sprays of dark-scarlet flowers; white forms of Lælia anceps, Trichopilia Goldiei, Zygopetalum Roeblingianum, Catasetum discolor, various Sophro-Lælio-Cattleyas, including S.-L.-C. Electryon (L.-C. Gottoiana × S.-L. Felicia) with pretty, nankeen-yellow flowers with claret-coloured lip; and the pure-white-petalled L.-C. Bella alba.

Messrs. SANDER & SONS, St. Albans, staged a good group, for which a Silver Flora Medal was awarded. A collection of Cypripediums had for the best C. insigne Louis Sander (raised between C. insigne Harefield Hall and C. i. McNabianum), with a broader and more squarely-arranged dorsal sepal than Harefield Hall, clear-white with gamboge-yellow base and purple spotting. A fine form of C. Mrs. Wm. Mostyn, C. Pyramus, Cattleya Miranda, C. Thayeriana, Pleurothallis Roezlii, Epidendrum laterale, Phalænopsis Rimestadiana, and various Lælio-Cattleyas were also noted.

Messrs. STUART LOW & Co., Bush Hill Park, were awarded a Silver Flora Medal for a group, in which their fine type of Dendrobium Wardianum and other Dendrobiums were well represented.

Messrs. JAS. CYPHER & SONS, Cheltenham, were awarded a Silver Flora Medal for an effective group, the centre of which was of the pretty hybrid Calanthes Bryan, Wm. Murrey and Bella, arranged with Lælia anceps Hillii and other L. anceps. The body of the group was of Cypripediums and the new Cœlogyne intermedia (see Awards), also Miltonia Bleuana, Ada aurantiaca, and several pretty Brasso-Cattleyas and Odontoglossums.

Mr. W. A. MANDA, St. Albans, secured a Silver Banksian Medal for a very remarkable collection of varieties of Cattleya Trianæ, ranging from white to rose, with deep-rose-crimson lip, the variety Mandaiana having a red line. Forms of Phalænopsis casta and a distinct form of Cypripedium insigne named Lageræ with brown base to the dorsal sepal were also shown.

Messrs. HASSALL & Co., Southgate, staged a group for which a Silver Banksian Medal was awarded. Very effective were forms of Odontoglossum amabile, O. ardentissimum, and other hybrids.

Lieut.-Col. Sir GEO. L. HOLFORD, K.C.V.O. (gr. Mr. H. G. Alexander), showed Cypripedium Jura (insigne Harefield Hall × Mrs. Mostyn), a flower of large size and good proportions, with a broad, white dorsal sepal bearing large reddish purple spotted lines. The petals were very broad and curved forward, coloured like C. Beeckmani.

Sir JEREMIAH COLMAN, Bart., Gatton Park (gr. Mr. Collier), staged an interesting group, in which were a fine specimen of Cirrhopetalum robustum (graveolens), the curious Eria globifera (shown at the last meeting as Fletcheri), the blush-white Zygopetalum rostratum, Zygo-Colax Wiganianus, Z.-C. Vetichianus, Masdevallia tovarensis, Pleurothallis Scapha and Lycaste lasioglossa.

Mr. SIDNEY FLORY, Tracy's Nursery, Twickenham, sent Odontoglossum Phœbe magnificum, with a fine spray of showy, white flowers evenly spotted with reddish purple, a curious cross between O. Adrianæ and O. Rossii, which closely retained the O. Rossii character, and several hybrid Cypripediums, of which the hybrid between C. insigne Harefield Hall and C. Leeanum Clinkaberryanum was a fine form.

E. H. DAVIDSON, Esq., Orchid Dene, Twyford, showed a selection of fine hybrids, his grand form of Sophro-Cattleya Saxa gaining an Award of Merit. Others noted were a very richly-coloured form of Odontioda Bradshawiæ and Odontoglossum illustrissimum with violet-purple flowers tipped with white.

Baron BRUNO SCHRÖDER, The Dell, Englefield Green (gr. Mr. J. E. Shill), showed a noble plant of Lælia anceps Hilliana rosefieldiensis with several spikes of large, white flowers with pink front to the lip.

FRANCIS WELLESLEY, Esq., Westfield, Woking (gr. Mr. Hopkins), sent the pure-white, fragrant Brasso-Cattleya Wellesleyæ (B. glauca × C. Mossiæ Wagneri), Cypripedium Morningtoniæ (F. Sander × nitens), with a dark-spotted dorsal sepal, and C. Cupid magnificum, cream-white, tinged and veined with light purple.

J. BRISDON SEATLE, Esq., Fairfield, Putney (gr. Mr. Paice), showed Odontoglossum crispum Rossendale, and a blotched seedling O. crispum.

C. J. LUCAS, Esq., Warnham Court (gr. Mr. Duncan), showed Cypripedium George Branch (Lathamianum × Boxallii), a large, well marked flower.

C. J. PHILLIPS, Esq., The Glebe, Sevenoaks (gr. Mr. Bucknell), sent Odontioda Euterpe "The Glebe variety," a distinct form, of a uniform deep red, with a violet shade; O. Joan (Odontioda Charlesworthii × Odontoglossum ardentissimum), claret-red, with slight white lines; and the remarkable Odontioda Madeline var. Prince of Orange. (See "Awards.")

AWARDS.

FIRST-CLASS CERTIFICATE.

Cattleya Enid var. F. Lambeau (Mossiæ Reineckiana × Warscewiczii Frau Melanie Beyrodt), from Monsieur FIRMIN LAMBEAU, Brussels (gr. Mr. Demunter). A charming Cattleya, large in size and perfect in shape, pure white, with a distinct veining of purple in the lip, which has light yellow in the throat.

AWARDS OF MERIT.

Lælio-Cattleya Firminii var. ardens (L.-C. Ceres × C. Dowiana aurea), from Monsieur FIRMIN LAMBEAU. A darker form of the fine hybrid for which Monsieur LAMBEAU previously received a First-class Certificate. The flower is as large as C. Mossiæ; the sepals and petals are bright copper-red on an orange-coloured ground. The lip is dark, ruby-crimson, with orange-coloured disc.

Odontioda Madeline var. Prince of Orange (Odontioda Charlesworthii × Odontoglossum crispum), from C. J. PHILLIPS, Esq., The Glebe, Sevenoaks (gr. Mr. Bucknell). A very remarkable variation, in which the deep blood-red of O. Charlesworthii is almost eliminated, and the form and substance of a good Odontoglossum crispum presented. The ground colour is primrose yellow, the inner halves marked with pale, reddish-lilac blotches.

Odontoglossum Aireworth "Goodson's variety" (Lambeauianum × crispum), from H. S. GOODSON, Esq., Fairlawn, Putney (gr. Mr. G. E. Day). A very pretty flower, with broad segments tinted with pale lilac, the inner halves being spotted with cinnamon-brown.

Sophro-Cattleya Saxa "Orchid Dene variety" (S. grandiflora × C. Trianæ), from E. H. DAVIDSON, Esq., Orchid Dene, Twyford. A good flower, some 3 inches across, of a clear rose-red, with yellow base to the lip.

Cœlogyne intermedia (Cristata Lemoniana × C. Massangeana), from Messrs. JAS. CYPHER & SONS, Cheltenham. A graceful hybrid that may be said to be intermediate between the parents. The inflorescence is arched, and bears many flowers, these latter being white with yellow disc, and reddish ridges on the lip.

Fruit and Vegetable Committee.

Present: Jas. Cheal, Esq. (in the Chair); Messrs. W. Bates, A. R. Allan, H. Markham, J. Davis, A. Bullock, Geo. Wythes, P. C. M. Veitch, J. Jaques, Owen Thomas, H. Somers Rivers, C. G. A. Nix, G. Reynolds, Edwin Beckett, W. E. Humphreys, A. Grubb, and S. T. Wright (secretary).

A Silver Banksian Medal was awarded to Sir WALTER GILBEY, The Orchards, Elsenban, Stansted, for an exhibit of preserved fruits.

Messrs T. S. RIVERS & SON, Sawbridgeworth, excelled all their previous displays of Oranges in a fine exhibit, which was awarded a Gold Medal. In the centre of the group was a pergola furnished with three large branches, one of St. Michael, with 50 fruits, another of Dom Louise, with about 80 fruits, and a third of Valencia Lemon, cut from a tree bearing 140 fruits. There were pot trees of various varieties, all in splendid health and fruiting abundantly. St. Michael, Egg, and Dulcissima are amongst the most prolific sorts. The stage was covered with gathered fruits, and the best-flavoured of these were Achilles, Egg, and Embiguo or Navel.

Messrs. J. CHEAL & SONS, Crawley, exhibited 65 varieties of Apples and Pears. The fruits were above the average in quality, and were remarkably plump and fresh. The new Crawley Beauty was shown in three large baskets; from its appearance it was equal to any in the collection. The variety Encore was also included. Of the better-known sorts, Bismark, Lord Derby, Claygate Pearmain, Mannington Pearmain, King of Tompkins County, Alfriston, and Hollandbury may be instanced. The Pears included Uvedale's St. Germain, Santa Claus, and Duchesse de Mouchy. (Silver-gilt Knightian Medal.)

Messrs. SUTTON & SONS, Reading, showed remarkably good root vegetables, for which a Silver Banksian Medal was awarded. Carrots included very large roots of New Red Intermediate; Beets, Sutton's Black, Blood Red and Green Top; Onions, Long-Keeping, Ailsa Craig, Crimson Globe, Sutton Globe, and Improved Reading; and Potatos.

Messrs. JAMES CARTER & Co., Raynes Park, Wimbledon, showed a solid, conical-hearted Savoy named Cartercone. The variety was recommended for trial in the Wisley gardens.

EDINBURGH BOTANICAL.

JANUARY 9.—The third meeting of the session was held on the above date, Sir Archibald Buchan-Hepburn, Bart., in the chair.

Mr. W. E. Travis communicated a paper dealing with additions to the flora of Arran; Mr. Miller Johnson, B.Sc., a paper describing the invasion of vegetation into disforested land.

A paper on the Primulas of the Bullate section was read on behalf of Professor Bayley Balfour, F.R.S. The descriptions of two new species—Primula rufa and P. Monbeigii—from the Chinese province of Yunnan were given. The species of the section are natives of Yunnan and Tibet with an outlier—P. Lacei—in Baluchistan. Dried specimens of most of the members of the group were exhibited, including one magnificent sheet of P. Forrestii, collected by Mr. George Forrest in Yunnan.

Mr. McTaggart Cowan communicated a paper dealing with Cochlearia danica, Linn., being a preliminary note to a revision of the genus Cochlearia, as it occurs in Britain.

Among the exhibits were:—A series of new species, collected by Mr. George Forrest in Yunnan, including the following striking plants:—Cyananthus formosus (Diels), C. Forrestii (Diels), Codonopsis Bulleyana (Diels), C. meleagris (Diels), Adenophora cœlestis (Diels), A. megalantha (Diels), Arenaria ionandra (Diels), a new Burmese species of Cordia (C. globifera, W. W. Sm.) with very tomentose leaves. Of a large collection of living plants shown from the Royal Botanic Garden, the following were of special interest:—

Acanthocarpus Preissei, Lehm.—A remarkable south-west Australian plant of that group of Monocotyledons which seem to connect Juncaceæ and Liliaceæ. The twisted leaves are a prominent feature of adaptation to dry conditions.

Bulbine favosa, Schult.—A strong-scented, yellow-flowered South African plant.

Parthenium Hysterophorus, Linn.—An American white-flowered species.

Pleione Delavayi, Rolfe.—A fine dark-flowered species of much better colour than any other in cultivation.

Pomaderris phylicæfolia, Lodd.—An Australasian ericoid form.

Primula petiolaris, Wall. var. pulverulenta, Hook. f.—A delightful plant introduced as P. Winteri from Kumaon, W. Himalaya.

Samolus ebracteatus, H.B.K.—A Central American form with rather smaller flowers than our native species, S. Valerandii.

Saxifraga hederacea, Linn.—White-flowered species of the Cymbalaria section from south-east Europe and Asia Minor, forming a pretty cover on a rockery after the fashion of Thymus Corsica.

Sedum alamosanum (S. Wats), S. cupressoides (Helmsley), S. longipes (Rose).—Three Mexican species of Sedum, of which S. cupressoides is of special interest as a companion growth form to that of the South African Crassula lycopodioides.

STIRLING CHRYSANTHEMUM.

JANUARY 11.—The annual meeting took place on this date, under the chairmanship of Mr. Henry Kinross, the president. The annual report and balance-sheet were read and adopted. The income from all sources exceeded the expenditure by £8 15s. 8d. This was considered satisfactory, as the receipts at the hall door on the days of the show were £6 9s. 3d. less than in the previous year. The show schedule was considered; several classes were added in the amateurs' section. Captain Stirling, of Keir, is hon. president of the society.

SCOTTISH HORTICULTURAL.

JANUARY 14.—The annual business meeting of this association was held in Dowell's Rooms, George Street, Edinburgh, on this date, Mr. Massie, the president, was in the chair, and there were 170 members present.

The annual report stated that the work of the past session had been carried on vigorously, and that the average attendance at the ordinary monthly meetings was over 90. The exhibits at the monthly meetings were generally of much excellence, and 4 First-class Certificates, 14 Certificates of Merit, and 8 Cultural Certificates were awarded to new or meritorious plants, &c. Chiefly as the result of a personal appeal by Captain Stirling, of Keir, the honorary president, there had been a large accession of new members in the higher grades of the scale of subscriptions brought into existence last year under the new constitution, and the membership now stood at about 1,400, a net increase over the previous year's number of 120. The Horticultural Institution Fund, which at the commencement of the previous year stood at £80, now amounted to £288; a benevolent fund had been instituted, and the funds of the association, which now, after providing for present depreciation on stocks, stood at £828, were fully £100 better than at the beginning of last year. A considerable number of local secretaries had been appointed in the various Scottish counties, and the governors of the Edinburgh and East of Scotland College of Agriculture had favourably entertained a suggestion made by the council that horticulture should have direct representation on the governing body of that institution. The Chrysanthemum show, owing to the sunless, backward season, was rather smaller than usual, nevertheless there was a balance of income over expenditure of £22 18s. 9d., and it was visited by over 21,000 people during its three days' run. Both the council's report and the financial statement were adopted unanimously.

On the motion of Mr. Fife, seconded by Mr. Whytock, the president, Mr. Massie, was elected an honorary life member of the association.

Captain Stirling, of Keir, was re-elected honorary president for the current session. Mr. David King was elected president, and Messrs. R. Fife and W. Galloway were elected to the two vacant vice-presidencies. The following

were elected to the seven vacancies in the council:—Messrs. W. Copeland, Dr. W. G. Smith, H. Thomson, G. Cochran, A. Johnstone, W. Mather, and A. C. Scott. Mr. A. D. Richardson was re-elected secretary and treasurer, and Messrs Robertson and Carphin, C.A., were elected as official auditors. On the motion of Mr. King, a hearty vote of thanks was accorded to the retiring office-bearers, which was acknowledged by Mr. Massie.

A donation of £10 each was voted to the Gardeners' Royal Benevolent Institution and the Royal Gardeners' Orphan Fund.

It was intimated that, on the invitation of Mr. C. W. Cowan, the members would visit Dalhousie Castle on April 19. A syllabus of subjects for session 1913 was submitted, and it was agreed to revert to the former hour of meeting, viz., 7.30 p.m., all the year round.

A number of donations to the library, including 25 volumes of the *Gardeners' Chronicle* from 1841 onwards, from Messrs. Wm. Thomson & Sons, Clovenfords, were announced.

The new president, Mr. King, will deliver his inaugural address at the meeting on February 4.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

JANUARY 13.—The monthly committee meeting of the above society was held in the Horticultural Hall, Westminster, on this date, Mr. Chas. H. Curtis in the chair. Five new members were elected. It was announced that the sick pay for the month amounted to £79 6s. 6d.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.

JANUARY 23.—As these pages are being passed for press we learn the result of the election of pensioners to the Gardeners' Royal Benevolent Institution. The election was preceded by the annual meeting of the subscribers, which took place at Simpson's Restaurant, Strand. Sir Harry Veitch, chairman and treasurer, made an earnest appeal for increased support, pointing out that, although the claims of 67 candidates had been allowed by the committee, it was only possible to elect 20. The annual report, read by the secretary, was accepted unanimously.

RESULT OF ELECTION.

	Age.	No of Votes.
Chisholm, George D. ...	59	3,450
Morley, Ebenezer ...	67	3,417
Stevens, Richard ...	64	3,394
Throssell, Frances ...	73	3,253
Barnes, Henry	73	3,220
Page, John	78	3,144
Forty, George	64	3,120
Smith, Mary	62	3,107
Baxter, Edward... ...	75	3,014
Baker, William ...	73	2,991
Wright, Harvey ...	68	2,935
Tucker, Francis ...	62	2,896
Witt, Harry	64	2,877
Stocking, Fanny ...	62	2,869
Evans, Harriet D. ...	65	2,859
Birse, William	78	2,826
Canham, Anne	71	2,779
Bryan, Susan	77	2,778
James, Theophilus ...	84	2,773
James, Cornelia... ...	65	2,755

Candidates Elected after the Poll:

The following two candidates were elected by the Committee in virtue of Rule III, Clause 10:

Batten, Martha (64).
Reed, Daniel (71).

A further candidate, William E. Hill, was elected owing to the kindness of Mr. Arthur W. Sutton, who guaranteed a pension for a year.

Robert McCombie was chosen by Mr. N. N. Sherwood as the recipient of a pension provided by the "Sherwood Commemoration Gift, 1912."

It was resolved, on the proposition of Mr. Owen Thomas, to elect another candidate, W. G. Gaiger, in anticipation of a sum of money which is expected from the directors of The Royal International Horticultural Exhibition.

In all there were 25 elections during the day, being the highest number elected on any single occasion in the history of the Institution.

LINNEAN.

JANUARY 16.—At a meeting held on the above date, the president, Professor E. B. Poulton, F.R.S., announced that the council had decided to apply the bequest of £100 left by Sir Joseph Hooker to the Society as the nucleus of a fund to be styled "The Sir Joseph Hooker Lecture" Fund, of which particulars will be given at the next general meeting.

Mr. G. Claridge Druce reported on six recently-discovered or described new British plants, including Spergularia atheniensis, Heldr. and Sart.

The general secretary read a letter from Dr. George Henderson, received that morning, with specimens of Alnus glutinosa, Medic., and what he regarded as A. incana, Medic., the latter showing catkins discharging pollen freely in December, whilst those of the former still remained closed.

THE WEATHER.

THE FOLLOWING SUMMARY RECORD of the weather throughout the British Islands, for the week ending January 18, is furnished from the Meteorological Office:—

GENERAL OBSERVATIONS.

The *weather* continued unsettled, and precipitation was again frequent, but fair, dry intervals were not uncommon in most parts of England and Ireland.

The *temperature* was below the average, the deficit being about 5° in Scotland E. and W., England N.E., and Ireland S., and about 4° in England N.W. and Ireland N. In England E., however, it was only 0·6°, and in England S.E. no more than 0·1°. The highest of the maxima were recorded mostly in the latter half of the week, and ranged from 52° in England N.W. and 51° in the English Channel to 44° in Scotland N. and England N.E., and to 43° in Scotland E. Early in the week the maxima were below 32° at many stations in North Britain. The lowest of the minima, which occurred generally on the 13th or 14th, ranged from 10° in England N.W. (at Newton Rigg on the 13th) and 11° in Scotland E. (at West Linton on the 14th) to 27° in Scotland N. and to 35° in the English Channel. The lowest grass readings were 0° (zero) at Newton Rigg, 5° at West Linton, 6° at Harrogate and Worksop, and 10° at Rauceby and West Witton. In various parts of the kingdom the earth temperature was below the normal at a depth of 1 foot, but at all stations it was above it at a depth of 4 feet.

The *rainfall* was less than the average in Scotland N., England N.W., and the Midland Counties, and about equal to it in Scotland E. and W. and Ireland N. Elsewhere it was in excess, the difference being large in the southern and south-western districts. At a few stations in the north-west of Scotland the precipitation was very slight, but at Cally (Gatehouse) 1·20 inch was recorded on the 14th, and 1·35 inch on the 15th. The fall of snow in the North of England early in the week considerably increased the depth of that already lying. At Cockle Park, Morpeth, its depth on the 13th was 18 inches.

The *bright sunshine* exceeded the normal except in England N.E. and over Scotland, the excess being considerable in many parts of England. In England S.E. the mean daily duration was 2·7 hours, and the percentage of the possible amount 32; in the English Channel the corresponding values were 2·2 hours and 27, and in England E. 1·9 hour and 24. In Scotland and the north-east of England the percentage of the possible duration was 8 or less, and the mean daily figure about 0 5 hour.

THE WEATHER IN WEST HERTS.

Week ending January 22, 1913.

Eleven days of almost continuous rain.—Since the present month began there have been only four unseasonably cold days, and but five cold nights—two of those cold days and three of those cold nights being in the past week. On each of the three cold nights in question the exposed thermometer registered only 11° of frost. The ground is at the present time 1° warmer than is seasonable at 2 feet deep, but it is slightly below the average at 1 foot deep. Rain has fallen on all but one of the last 11 days, and to the total depth of 2¼ inches, or very nearly as much as the average quantity for the whole of January. Of that amount seven gallons of rainwater came through the bare soil percolation gauge, and five-and-a-half gallons through that on which short grass is growing. The sun shone on an average for 1 hour 22 minutes a day, which is 13 minutes a day short of the mean daily duration of bright sunshine in the middle of January. Light airs as a rule prevailed, and the direction of these light airs has been principally some point between south and west. For 31 hours the direction of the wind was some northerly point. I mention this because in the previous five weeks there had been virtually no winds at all from that half of the compass. The mean amount of moisture in the air at 3 p.m. exceeded a seasonable quantity for that hour by three per cent. A selected patch of Double Snowdrops came first into flower in my garden on the 18th inst., which is 22 days earlier than its average date for the previous 26 years, and three days earlier than in the earliest of those years.—*E.M., Berkhamsted, January 22, 1913.*

ENQUIRY.

MICE IN THE GARDEN.—Can any reader inform me of a method of ridding the garden of mice without resorting to the use of poison? I have traps set always, and we keep several cats, but the gardens are alive with the pests. We keep dogs, and these might be injured if poison were utilised to kill the mice. *G. W.*

MARKETS.

COVENT GARDEN, January 22.

[We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general averages for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—EDS.]

Cut Flowers, &c.: Average Wholesale Prices.

	s.d.	s.d.
Arums (Richardias)	3 0	4 0
Azalea, per dozen bunches ...	2 6	3 0
Bouvardia, per dozen bunches, white and coloured ...	6 0	8 0
Camellias, white, per dozen ...	1 6	2 0
Carnations, per dozen blooms, best American varieties ...	1 6	2 0
— smaller, per doz. bunches	12 0	15 0
— Carola (crimson), extra large	4 0	5 0
— Malmaison, p. doz. blooms:		
— — pink ...	12 0	15 0
Chrysanthemums:		
— white, per dozen	2 0	4 0
— — per dozen bunches ...	8 0	10 0
Daffodils, per doz. bunches:		
— Golden Spur...	4 0	5 0
— Sir Watkin ...	5 0	6 0
— Henry Irving...	3 0	4 0
— Victoria ...	5 0	—
— Princeps ...	3 6	4 0
Eucharis, per dozen	2 6	3 0
Freesia, white, per doz. bunches...	2 0	2 6
Gardenias, per box of 15 and 18 blooms ...	6 0	8 0
Lilium auratum, per bunch ...	2 0	2 6
— longiflorum, per doz., long	3 0	3 6
— — short ...	2 0	2 6
— lancifolium alba, long ...	1 6	2 0
— — short ...	1 3	1 6
Lilium speciosum rubrum, p. doz., long	1 6	2 0
— — short ...	1 0	1 8
Lily of the Valley, per dozen bunches:		
— extra special ...	12 0	15 0
— special... ...	9 0	10 0
— ordinary ...	6 0	8 0
Mignonette, per doz. bunches...	3 0	4 0
Orchids, Cattleya, per doz. ...	15 0	—
— Cypripedium	2 0	3 0
— Odontoglossum crispum ...	4 0	5 0
Pelargoniums, p. dz. bunches, Double Scarlet	9 0	10 0
Roses, 12 blooms:		
— Lady Hillingdon	3 0	4 0
— Liberty ...	5 0	8 0
— Madame A. Chatenay ...	5 0	8 0
— Niphetos ...	1 6	2 0
— Richmond ...	5 0	8 0
Spiræa (Astilbe) japonica, per dz. bunches ...	5 0	6 0
Tuberose, p. doz. blooms, long...	1 3	—
— — short ...	0 10	1 0
Tulips, per dozen bunches:		
— double red ...	12 0	15 0
— — orange ...	10 0	12 0
— — pink ...	10 0	12 0
— red	5 0	6 0
— white	6 0	—
— yellow... ...	7 0	—
— bronze... ...	6 0	7 0
— pink	8 0	9 0
Violets, Princess of Wales, per dozen bunches	1 6	2 0
— Anemone fulgeris	2 6	3 0

Guernsey Flowers: Average Wholesale Prices.

	s.d.	s.d.
Narcissus:		
— Soleil d'Or ...	2 0	2 6
— Grand Primo	1 9	2 0
— Princeps ...	2 0	2 6
Narcissus:		
— Henry Irving...	2 6	3 0
— Gloriosa ...	1 9	2 0
— Poeticus ...	4 0	5 0

French Flowers: Average Wholesale Prices.

	s.d.	s.d.
Anemone, double pink, per doz.	1 6	2 0
Lilac, white, per bunch ...	3 6	4 0
— mauve... ...	4 0	6 0
Marguerite, yellow, per doz. bnchs	1 9	2 0
Mimosa, pr. bunch	0 9	1 0
Narcissus, Paper White, pr. pad, 48 bunches ...	5 0	6 0
— Soleil d'Or, p.pad	5 0	6 0
Ranunculus, per doz. bunches:		
— Barbaroux ...	4 0	5 0
— double scarlet	8 0	9 0
— yellow	8 0	10 0
— bronze... ...	10 0	12 0
— carmine ...	5 0	6 0
Roses, Safrano, pkts. of 24 blms.	1 6	2 0
Violets, per pad ...	3 0	4 0
— Parma, large bunches, each	2 0	—

Cut Foliage, &c.: Average Wholesale Prices.

	s.d.	s.d.
Adiantum Fern (Maidenhair), best, per doz. bunches ...	6 0	7 0
Agrostis (Fairy Grass), per dz. bunches ...	2 0	4 0
Asparagus plumosus, long trails, pr. ½ doz.	1 6	2 0
— medium, doz. bunches ...	12 0	18 0
— Sprengeri ...	10 0	12 0
Berberis, natural, per doz. bnchs	3 0	4 0
Carnation foliage, doz. bunches...	3 0	—
Croton foliage, various, dz. bchs.	12 0	15 0
Cycas leaves, artificial, per doz.	3 0	12 0
Eulalia japonica, per bunch ...	1 0	1 6
Moss, gross bnchs.	6 0	—
Myrtle, dz. bchs. (English), small-leaved...	6 0	—
— French ...	1 0	—
Smilax, per bunch of 6 trails ...	1 0	1 3

Plants in Pots, &c.: Average Wholesale Prices.

	s.d.	s.d.
Azalea, white and coloured, per dozen pots ...	30 0	36 0
Aralia Sieboldii, dz.	6 0	7 0
Araucaria excelsa, per dozen ...	18 0	21 0
Asparagus plumosus nanus, per dozen... ...	10 0	12 0
— Sprengeri ...	8 0	9 0
Aspidistra, p. dz., green	21 0	30 0
— variegated ...	30 0	60 0
Begonia Gloire de Lorraine, 48's, per dozen ...	9 0	12 0
Cinerarias, p. doz.	9 0	10 0
Cocos Weddeliana, per dozen:		
— 60's ...	6 0	12 0
— larger, each	2 6	10 6
Croton, per dozen	18 0	30 0
Cyclamens, 48's ...	10 0	12 0
Cyperus alternifolius, p. dz.	5 0	6 0
— laxus, per doz.	4 0	5 0
Dracæna, green, per dozen ...	10 0	42 0
Erica hyemalis ...	12 0	15 0
— gracilis, 48's ...	12 0	15 0
— — in thumbs	3 6	4 0
— — 60's ...	6 0	8 0

Plants in Pots, &c.: Average Wholesale Prices *(Contd.)*.

	s.d.	s.d.
Ferns, in thumbs, per 100	8 0	12 0
— in small and large 60's	12 0	20 0
— in 48's, per doz.	6 0	—
— choicer sorts, per doz.	8 0	12 0
— in 32's, per dozen	10 0	18 0
Ficus elastica, per dozen	9 0	12 0
Genistas, per doz.	12 0	—
Geonoma gracilis, 60's, per dozen	6 0	8 0
— larger, each	2 6	7 6
Hyacinths, white, in pots, p. doz.	12 0	15 0
Kentia Belmoreana, per dozen	5 0	42 0
— Fosteriana, 60's, per dozen	4 0	6 0
— — larger, per dozen	18 0	63 0
Latania borbonica, per dozen	12 0	30 0
Lilium lancifolium rubrum in pts., per dozen	18 0	21 0
Lilium lancifolium alba, in pots., dozen	18 0	21 0
— longiflorum, per dozen	18 0	30 0
Lily of the Valley	18 0	21 0
Marguerites, in 48's, per doz., white	8 0	10 0
Pandanus Veitchii, per dozen	36 0	48 0
Pelargonium (Geranium), double scarlet, 48's	4 0	5 0
— other varieties	5 0	6 0
Phœnix rupicola, each	2 6	21 0
Poinsettias, per dozen pots, 48's	10 0	12 0
— 60's	6 0	—
Spiræa japonica, per dozen pots	6 0	8 0
— pink	10 0	12 0
Tulips, per box of 24's ;		
— white	1 9	2 0
— pink	2 0	2 6
— scarlet (Tulips or Bulbs)	1 9	2 0

Fruit: Average Wholesale Prices.

	s.d.	s.d.
Apples :		
— Cox's Orange, ½ bushel	6 0	10 0
— Cooking, per bushel	5 0	6 0
— Canadian, brls.	18 6	30 0
— Wenatchee, p. case	8 0	9 6
— American, brls.	18 6	30 0
— Californian Newtowns, case	7 0	8 0
— Nova Scotian, per barrel	14 0	22 0
— Oregon, Newtown Pippin, per case	10 6	11 6
Apricots, Cape, per box	4 0	6 0
Bananas, bunch :		
— Doubles	10 0	12 0
— No. 1	9 0	10 0
— Extra	11 0	12 0
— Giant	12 0	16 0
— Loose, p. doz.	0 6	1 0
— Red coloured	4 6	5 6
— Jamaica, per ton	£9	£12
— Jamaica Ordinary, per box (9 doz.)	4 0	5 6
Dates, per dozen	2 9	3 0
— Egyptian, cwt.	25 0	—
Cranberries, p. case	9 6	12 0
Grape Fruit, case :		
— 96's }		
— 80's }		
— 64's }	16 0	22 0
— 54's }		
— per dozen	4 0	6 0
Grapes (English), per lb. :		
— Canon Hall	8 0	15 0
— Muscat of Alexandria	15 0	20 0
— Black Alicante	0 10	1 0
— Almeria, barrel	16 6	22 6
— Gros Colman	1 2	2 6
— Belgian, p. lb.	0 10	1 0
Lemons, per case :		
— Malaga	16 0	—
Lemons, Messina, per case	9 0	21 0
Nuts, Almonds, per bag	52 6	—
— Brazils, cwt.	54 0	62 0
— Spanish, per sack	40 0	42 0
— Barcelona, per bag	35 6	36 6
— Cocoanuts, 100	18 0	23 0
— English Cobs, per lb.	0 3	0 4
— Chestnuts, bg.	14 0	26 0
— Walnuts French, per cwt.	30 0	—
— Naples, p. cwt.	64 0	—
Lychees, 1lb. box	1 6	—
Oranges :		
— Seville, sours, case	17 6	—
— Messina, bitters, case	8 0	8 6
— Jaffa, per case	9 0	9 6
— Mandarines, p. box	1 3	6 6
— Florida Tangerines, p. case	14 0	16 0
— Denia, per case	12 6	23 0
— Californian. Seedless, case	11 6	13 6
Peaches, Cape, box	12 0	30 0
Pears :		
— French, per crate	6 0	8 0
— Dutch Catillac, ½ bushel	3 6	—
— Californian, Winter Nelis, per case	13 6	14 6
— — Easter Beurré, p. case	8 0	8 6
— American, per barrel	7 0	8 0
Pineapples, St. Michael	2 6	4 0
Rhubarb, dozen bundles	0 10	1 2
— Natural	3 0	4 0

Vegetables : Average Wholesale Prices.

	s.d.	s.d.
Asparagus, Giant, per bundle	10 0	12 0
— Paris green	3 6	4 0
— Sprue, bundle	0 8	—
— Dijon	2 6	—
— Lauris	5 6	—
Artichokes (Globe), per dozen	2 0	—
— ground, ½ bus.	1 0	—
— Batavia, French, dozen	2 0	2 6
Beans :		
— Guernsey, lb.	2 6	4 0
— French, per lb.	1 0	1 3
— Madeira, per handle	3 0	—
Beetroot, p. bushel	1 6	2 6
Broccoli, bushel	1 0	—
— bags	1 6	—
Cabbages, p. tally	3 0	—
— boxes	1 6	—
— red, per dozen	1 0	—
Carrots (English), pr. doz. bun.	2 0	3 0
— unwashed, per bag	2 6	—
— washed, bag	3 0	—
Cauliflowers per tally	7 0	10 0
— boxes	2 3	4 6
— Cornish, crate	3 0	4 0
— Italian, crate	2 9	—
Celeriac, per doz.	1 0	1 6
— French, p. doz.	3 0	—
Celery, per dozen "fans"	12 0	18 0
— unwashed	10 0	12 0
Chicory, per lb.	0 3½	—
Cucumbers, p. doz.	14 0	16 0
Endive, per dozen	1 9	2 6
— French p. doz.	2 6	—
Greens, per bushel	1 3	—
— bags	1 9	—
Herbs (sweet), pkt. per gross	10 0	—
Horseradish, 12 bundles	12 0	15 0
Leeks, per doz.	1 0	2 0
Lettuce, French, per crate	1 6	3 9
— per dozen	1 0	1 6
Mint, per dozen bunches	3 0	—
Mushrooms, cultivated, per lb.	0 10	—
— broilers	0 8	0 9
Mustard and Cress per doz. punnets	0 4	0 6
Onions (English) per bag	3 0	4 6
— per bushel	1 6	2 0
— picklers, per bag	4 0	—
— (spring), per doz bunches	3 0	—
— (Spanish). case	5 6	6 0
— Dutch, bags	2 0	—
Peas, French, pad of 10 lb.	5 0	—
— Guernsey, p. lb.	1 0	2 0
Parsley, per doz. bunches	2 6	3 0
Parsnips, per bag	2 0	2 6
— per bushel	1 3	—
Radishes (English) per dozen	1 6	—
Sage, per dozen	2 0	—
Savoys, per. tally	2 6	4 0
— per box	1 6	—
Seakale, punnets	1 0	1 3
Spinach, p. bushel	2 6	3 0
Sprouts, ½ bushel	1 0	1 3
— bags	1 6	—
— bushel	1 9	—
Scotch Kale, busl.	1 0	—

Vegetables: Average Wholesale Prices *(Contd.)*.

	s.d.	s.d.
Tomatos, Canary, per bundle	10 0	17 0
Thyme, dz. bnchs.	2 0	—
Turnips (English), per dz. bunches	1 6	2 0
— per bag	3 0	3 6
Turnips, unwashed, bag	2 6	—
Turniptops, bushel	1 0	1 3
— per bag	2 6	3 0
Watercress, p. dz. bunches	0 4	0 6

REMARKS.—English Apples are now limited to the varieties Bramley's Seedling and Dumelow's Seedling (Wellington). Consignments of Apples from overseas continue very heavy, especially from Nova Scotia. Wenatchee Apples in boxes consist of the varieties Jonathan, Winesap, and Spitzenberg, the last being a very popular variety owing to its rich colour and excellent flavour. Consignments of fruits from Cape Colony received recently consisted of about 600 cases of Apricots and Peaches. Other fruits expected to arrive soon from South Africa include Wickson, Kelsey and Chalcot Plums; also Pears, which are a heavy crop. Supplies of English and Belgian Grapes are very liberal for the time of year; but Muscat varieties are getting scarcer. Pears obtainable include Winter Nelis and Easter Beurré (Californian). Teneriffe Tomatos have not been so plentiful as usual in January, and their prices are firmer. Dwarf Beans from Guernsey, Madeira, and France are a limited supply. Asparagus, both English and French grown, is obtainable in fairly large quantities. Seakale continues moderately plentiful. Mushrooms have been a larger supply during the past week. The commoner vegetables continue plentiful and cheap. *E. H. R., Covent Garden, January 22, 1913.*

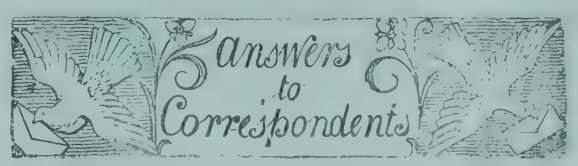
Potatos.

	per cwt. s.d.	s.d.		per bag. s.d.	s.d.
Bedfords	4 0	4 6	Dutch	3 0	3 9
Kents	4 3	5 0	Belgian	3 6	4 6
Blacklands	3 6	3 9	German	4 0	4 9
Evergoods	3 9	4 0	Dunbars	5 9	6 3
King Edward	4 3	5 0	Scotch (grey soil)	4 0	4 9

REMARKS.—Trade remains fairly good and prices are firm. Stocks of English and foreign Potatos are not so heavy as in previous weeks. *Edward J. Newborn, Covent Garden and St. Pancras, January 23, 1913.*

Obituary.

EDWARD WEBB. J.P., D.L.—We regret to record the death of Mr. Edward Webb, of Studley Court, Stourbridge, senior partner of the firm of Messrs. Edward Webb & Sons, Wordsley, which took place at Paris on Tuesday last Mr. Webb, who was in his 69th year, had been ailing for some few weeks. On Thursday, the 16th inst., he started for Nice. Whilst proceeding from Calais to Paris, he was overtaken by sudden illness, and he remained in an unconscious condition in Paris until his death. Mr. Webb was brought up to the milling and glass industries, but in the year 1873 he commenced business in the seed trade in conjunction with his brother, the late Colonel Webb. He had a wonderful capacity for business, and often travelled 1,200 miles a week to be present at various markets; he consistently attended Wolverhampton, Kidderminster and Worcester markets for a period of 40 years. He not only controlled the seed and hop business, but also the Wordsley Flour Mills, the large manure works at Saltney, and the farms at Kinver Hill, High Grove, Whittington and Cornsall, comprising some 1,200 acres. He was also a director of Messrs. Showell's Brewery, Birmingham, Messrs. Phipps, Northampton, Messrs. Rolinson's, Netherton, and the North Worcestershire Brewery Co. He was high sheriff for the county of Worcester in 1895, also deputy-lieutenant and justice of the peace. He married Margaret, third daughter of the late Charles Evers Swindell, Esq., of The Quarry, Oldswinford, and is survived by four sons and three daughters.



ADDRESS : *Enquirer.* Archibald Findlay, Mairsland, Auchtermuchty, Scotland.

ARUM : *F. G. B.* There is no trace of disease caused by fungi or insects. The trouble must be looked for in some wrong method of cultivation.

BEST EARLY PEA : *Teacher.* One of the most popular and reliable varieties is Gradus, or selections from that well-known variety, such as Early Morn and Early Giant. These varieties are of medium height, very free cropping, and the quality of Peas is excellent. They are only a few days later than the early, white-seeded varieties, which are far inferior for culinary purposes, and the newer sorts succeed in almost any soil and situation.

BOOKS : *Inquirer.* Both the books you mention may be recommended. The first treats of diseases due to climate, wrong treatment, &c. The second deals with diseases caused by parasitic fungi. Of English books the treatise by Massee, *Diseases of Cultivated Plants and Trees,* is admirable. For purposes of identification Cooke's *Fungoid Pests* will be found very useful. The best book dealing with insect pests is Theobald's *Insect Pests of Fruit.* There are, of course, excellent books in French and German, but those we have mentioned are as good as any to be found in any language.

BORDEAUX MIXTURE : *Dun.* This fungicide may be obtained from any of the horticultural sundriesmen. Or if you wish to make it yourself, a formula to be relied upon is that of Professor Galloway, of the United States Department of Agriculture. Put 25 gallons of water in a barrel or other wooden or earthenware vessel in which there is no metal, and wrap 6 lbs. of copper sulphate in coarse sacking, suspending this just below the surface of the water. In another vessel slack 4 lbs. of lime, bringing it into a smooth paste by adding only a little water from time to time during the crumbling of the lime. When the lime is properly slacked add sufficient water to bring the whole up to 25 gallons. When the copper sulphate is entirely dissolved and the lime is cool, pour the lime milk and the copper sulphate solution slowly together into a barrel holding 50 gallons, adding water and stirring the whole together for a few minutes after mixing. Air-slacked lime should not be used in making this mixture, as its employent would cause injury to the foliage. This mixture may be further diluted to the requirements of the case. It is better to use it rather under than over the strength that is safe. Spray one plant first and note the result. The ingredients used are: Water, 50 gallons; copper sulphate, 6 lbs.; unslaked lime, 4 lbs.

CHRYSANTHEMUMS : *J. P., Wakefield.* The damage is caused by the leaf-miner. See reply to *J. C., Milton,* in the issue for January 18, p. 48.

CINERARIA : *D. C.* There is no fungous disease present. The injury appears to be due to the presence of too much water in the soil. Try the effects of watering the plants at intervals of three days with a weak solution of sulphate of potash.

MITES INFESTING FERNS, &c. : *R. E.* The specimens belong to the genus Tyroglyphus, one of the cheese mites. These acarids sometimes swarm in incredible numbers in forage, hay, and farinaceous substances to such an extent that sometimes there is weight for weight of mites and fodder, &c. We have no evidence to prove, nowever, that the creatures are destructive to plant life, though they would certainly cause irritation if they occurred in very large numbers. Dust the plants with flowers of sulphur, which is the best deterrent for acarids.

NAMES OF PLANTS : *A.B.C.* 6, Probably Asparagus racemosus; in the absence of flowers the species cannot be determined with certainty.—*R. R.* 1, Sophronitis violacea; 2, Epidendrum ciliare; 3, Oncidium pubes; 4, O. longipes.—*R. H.* Lopezia miniata.—*W. F. & Sons.* Cotoneaster frigida.—*J. P. B.* 1, Euonymus europæus; 2, Anaphalis margaritacea.

PRICES OF PALMS : *Barcelona.* We do not recommend individual firms. Scan our advertisement columns.

ROSE FISHER HOLMES : *H. J.* This variety was named after the firm of Messrs. Fisher, Holmes & Co., Handsworth, now Messrs. Fisher, Son & Sibray.

VINE SHOOTS : *P. C. E. J.* The vine shoots are covered with vine scales, Pulvinaria vitis. Add a wineglassful of paraffin to 1 lb. of soft soap in 1 gallon of water, and thoroughly brush all the branches with the solution.

VIOLETS ATTACKED BY RED SPIDER : *Llandaff.* It is not a difficult matter to eradicate this pest, and we do not recommend the destruction of the plants. Syringe the foliage with sulphur mixed with water, and dust the leaves with sulphur.

Communications Received.—X. Y. Z. (please send name and address)—F. H.—H. B.—S. E.—York—W. W.—W. L.—A. G.—E. M.—H. J., Berlin—T. S.—Enquirer—S. J. H.—E. W. & Sons—H. C. L.—W. T.—A. P. B.—R. A. M.—H. R. H.—H. S. T.—O. S.—A. P. S.—W. J. T.—G. P.—D. F. R.—L. F. P.—R. P. B.—C. F. B.—E. R. J.—M. A.—H. H.—H. C., Geneva.

THE
Gardeners' Chronicle

No. 1,362.—SATURDAY, February 1, 1913.

CONTENTS.

Almond, the flowering of the 73
Apples, inheritance in ... 74
Bees and the cinematograph 73
Begonia "Julius" as a basket plant 75
Benevolent Institution, Gardeners' Royal 73, 78
Books, notices of—
British Lichens, Handlist of 75
The Botanical Magazine 73
Carnation propagation ... 76
Chrysanthemum Queen Mary 73
Chuck, Mr. Wm., retirement of 75
Cliveden, Buckinghamshire 65
Denmark, progressive ... 73
Fruit-farming in 1912 ... 68
Fruit-trees, ripened wood on 77
Gardeners, three famous 76
Horticulture, the progress of 72
Husbandry, the progress of 75
Hydrogen cyanide in plants 74
Law notes 77
Lenten Roses 77
Mice, method of trapping 79
Nesting-boxes, an exhibition of 73
Obituary—
Ryall, A.... 79
Shearer, William ... 79
Oranges, English-grown 73
Orchid notes and gleanings—
Brassavola Digbyana crosses... 66
Calanthe Regnieri ... 66
Ca'anthe Veitchii ... 66
Cleisostoma Wendlandorum 66
Peas, culinary, a bacterial disease of 74
Pests, scheduled—
The San José scale ... 69
Pine, the Corsican ... 77
Rainfall in 1912 74
Rosary, the—
Trials at Bagatelle ... 68
Societies—
Brighton, Hove and Sussex Hort.... ... 77
British Gardeners' Association 77
Coventry Chrys. ... 79
Horticultural Club ... 73
Liverpool Hort. ... 77
National Chrys. ... 73
Royal Horticultural ... 73
(Scientific Committee) 77
South African Combretaceæ, the 67
Week's work, the—
Apiary, the 71
Flower garden, the ... 70
Fruits under glass ... 70
Hardy fruit garden, the 71
Kitchen garden, the ... 71
Orchid houses, the ... 70
Plants under glass ... 70
Wilks, Rev. W., testimonial to 73

ILLUSTRATIONS.

Begonia "Julius" as a basket plant 75
Cliveden, Buckinghamshire, views at, 65, 66, 67 and Supplementary Illustration
Crump, Mr. W., portrait of 76
Goodacre, Mr. J. H., portrait of 76
San José scale, Aspidiotus perniciosus 69
Speed, Mr. W., portrait of 76
Trap for mice 79

CLIVEDEN.

(See figs. 33, 34 and 35, and Supplementary Illustration.)

ONE of the principal charms of Cliveden, the Buckinghamshire seat of Mr. Waldorf Astor, M.P., lies in the magnificent views of "the silvery, winding Thames" and in its sheltered woodland walks. The fame of the Cliveden Woods, which are seen to such advantage from the river is world-wide, and year by year attracts the admiration of thousands of visitors. The name Cliveden (with its older spellings Cliefden, Clifden, or Clyveden) means a dene, or wooded hollow, in a chalk cliff. Clyveden, which at one time was included in the Manor of Tappelowe and La Penne, was bestowed by William the Conqueror on his half-brother Odo, Bishop of Bayeaux, who was Regent of the kingdom in 1067 and 1073, during the absence of the King. After having been in the possession of the Priors of Merton from 1196 to 1538, the estate was surrendered to King Henry VIII, who added it to the Royal forest of Windsor. The Yew Tree Walk, the trees in which have old, gnarled trunks and thick branches meeting overhead and casting a deep gloom at midday, was probably planted just before this time. Queen Elizabeth separated Cliveden from the Royal domain, and in 1666 George Villiers, second Duke of Buckingham, built the first house on the estate, of which the main steps and façade still remain. Two years later the famous duel between the Duke of Buckingham and Lord Shrewsbury was fought on the small lawn on the east side of the house; the spot is marked by a spot of "blood" dripping from a sword, and the date (1668) is "written" in red-foliaged Alternanthera.

In 1696 the estate was purchased by the Earl of Orkney, who built the Blenheim Pavilion in honour of John, Duke of Marlborough, under whom he served as lieutenant-general; the earl also had a series of tapestries made to commemorate Marlborough's wars. The statue of Marlborough in the pavilion is beautifully executed in bronze, in which all the detail of the elegant dress of the period is to be seen. The pavilion commands a fine view, and immediately in front of it the sloping greensward leads to the delightful leafy glades, with many peeps of the river, and away to Canning's Oak. Frederick Prince of Wales rented the house for several summers, and on August 1, 1740, "Rule Britannia" was first played in Thomson's "Masque of Liberty" in his presence.

Disastrous fires were responsible for the present imposing mansion at Cliveden. In 1795 the residence was burnt to the ground, but it was not until about 1830 that another house was erected. A second disastrous fire occurred in 1849, and the house was rebuilt two years later by the second Duke of Sutherland, from whose family Cliveden passed to the Duke of Westminster, who afterwards sold the estate to Mr. William Waldorf Astor, the father of the present owner.

THE FLOWER GARDEN.

For very many years the display in the formal flower garden (see fig. 34), especially in the springtime, has had a very wide reputation. Throughout last summer the two large semi-circular flower-beds at the end of the garden were especially charming. They were entirely filled with Nepeta Mussinii, and, from a short distance, the effect was that of immense sweeps of pale-flowered, prostrate Lavender. The other beds were filled with the flesh-pink Pelargonium Mrs. Lawrence. The rounded trees on the smooth, grass terraces are very old Thorns, which have much the appearance of ancient spreading Oaks in miniature and are highly prized.

The high terrace walls have given a splendid opportunity for growing many exceedingly fine shrubs. Ceanothus Veitchianus, Buddleia variabilis, and Magnolia grandiflora have long since reached the balustrade. A Pomegranate, Jasmine, Wistaria, Indigofera Gerardiana, Cornus capitata, and Cistus ladaniferus also help to beautify this splendid retaining-wall, which has a pair of handsome gilded gates. On the terraces there are valuable statuary and handsome vases. The western terrace is bounded by an ornate summer-house, where the Vines which clothe the pillars and fill large, hanging baskets, supply cool greenness in summer and glowing colour in autumn. This squared terrace is paved with irregularly laid slabs of stone; sweet-



[Photograph by H. N. King.

FIG. 33.—CLIVEDEN, BUCKINGHAMSHIRE.

scented, lowly herbs grow in the crevices, and large, square, white marble vases, which, in summer, are filled with various Liliums—especially the odorous L. auratum—Hydrangeas and Sweet-scented Pelargoniums, are especially attractive. In front of the house a row of erect Golden Yews in ornamental vases have a bright, yet dignified, appearance. At the western end there is an especially beautiful marble vase of exquisite workmanship.

The tall clock-tower affords a magnificent view of the surrounding country, and on the side of the house broad borders of herbaceous plants enclose well-kept, spacious lawns, with a large, spreading Mulberry tree on one side of the entrance drive and a tennis court opposite. At the back of the herbaceous borders the walls display many shrubs, the evergreen Magnolias being especially luxuriant. The borders are planted with a view to obtaining the best effect in the early summer, and the very broad colour-schemes are successively managed. Contrasts of pink, blue and lavender were the favourite combinations employed last summer, and at the end of the season there was plenty of bright colour, the tall Hollyhocks being magnificent. Here, again, there is a wealth of Italian garden ornaments, which are carefully covered in the winter to protect them from damage by frost. This portion of the garden is enclosed by unusually tall, clipped Yew hedges. The carriage-drive, which is exceptionally broad, stretches between a magnificent avenue of Lime trees, planted on closely-mown, low grass terraces, to the marble fountain (see fig. 35), and to the right, to the Taplow entrance. *A. C. Bartlett.*

(To be continued.)

ORCHID NOTES AND GLEANINGS.

CALANTHE VEITCHII.

Mr. B. GOODACRE, of Moulton Paddocks Gardens, Newmarket, has sent us some magnificent inflorescences of this well-known and popular winter-flowering Orchid. The inflorescences, which in some cases were still attached to the pseudo-bulbs, were of quite extraordinary length, some of them measuring 4 feet 8 inches, 4 feet 10 inches, and 5 feet long. Of these three the shortest inflorescence bore 72 flowers, and the longest 50 flowers. We cite these as representative of a number of specimens equally remarkable for their unusual development. The flowers themselves were noteworthy for their brilliant colouring, which could not be equalled by specimens grown in the neighbourhood of large towns—in the suburbs of London, for instance. It says much for the decorative value of this Orchid that Mr. Goodacre's specimens, placed in water a fortnight ago, are still fresh and effective. Surely a great recommendation for so beautiful a flower.

CLEISOSTOMA WENDLANDORUM,

A VERY singular Orchid of ornamental appearance, even when not in flower, which was imported from Borneo and has flowered on several occasions both with the Hon. N. Charles Rothschild, Ashton Wold, Oundle (gr. Mr. C. Wright), and Sir Marcus Samuel, Bart., The Mote, Maidstone (gr. Mr. Bacon), has been identified at Kew as being Cleisostoma Wendlandorum Rchb. F. Cleisostoma is closely related to Saccolabium. The species is figured in *Xenia Orchidacea*, p. 121, t. 269, 10-20, and described as Saccolabium Wendlandorum Kranzlin.

In the habit of the plant it roughly resembles a thin-leaved Phalænopsis amabilis, the leaves being 6 to 10 inches long and 1 to 2 inches wide. The flowers are produced on a stout decurved raceme, sometimes branched, closely arranged, about one-eighth of an inch across, curiously constructed, with short inflated spur, yellow in colour, with some red markings. It is recorded by Hook. f. in *Fl. Brit. India*, vi, 74, and was collected by Parish in Tenasserim and Berkeley in the Andaman Isles.

It is interesting to know that Cleisostoma Wendlandorum, Acriopsis javanica, Bulbophyllum (Cirrhopetalum) acutiflorum and some other species imported together from Borneo should be so widely distributed as to extend to Burma and other parts of India.

BRASSAVOLA DIGBYANA CROSSES.

MONSIEUR CHAS. MARON, Brunoy, France, who makes a speciality of Brassavola Digbyana crosses, calls attention to some of his more recent productions, which are not well known in England and are worthy to be recorded. He enumerates Brasso-Cattleya André Maron (C. Schröderæ × B.-C. Mrs. J. Leemann), shown at Paris, November 23, 1911; B.-C. R. Ladamés, shown at the Royal Horticultural Society, October 24, 1911; B.-C. Jupiter (C. Luddemanniana × B.-C. Madame Chas. Maron), Berlin, 1909; B.-C. Vilmoriniana (C. Mossiæ × B.-C. Mrs. J. Leemann), Brussels, 1910; B.-C. Dietrichiana (C. Fabia × B.-C. Mrs. J. Leemann), Brasso-Lælio-Cattleya Leonardii (B.-L. Helen × C. Mossiæ); B.-L.-C. Beaucis (L.-C. intermedio-flava × B.-C. Mrs. J. Leemann), and B.-L.-C. Aurora (L.-C. Ernestii × B.-C. Mrs. J. Leemann).

CALANTHE REGNIERI.

THIS fine species has been very effective this winter in the gardens of Lady Wernher, Luton Hoo (gr. Mr. Metcalfe), where it and the other deciduous Calanthes are grown to perfection, the large silvery pseudo-bulbs being of great size, and the spikes often 4 to 5 feet in height. Successful culture of Calanthes is now much better understood than it was some years ago, and by keeping the plants when in bloom in a temperate and not too moist house they last a very long time in flower.



FIG. 34.—THE FORMAL FLOWER GARDEN, CLIVEDEN. [*Photograph by H. N. King.*

THE SOUTH AFRICAN COMBRETACEÆ.

(Continued from p. 53.)

2. TERMINALIA SERICEA, Burchell, ex De Candolle, Prod. III, 13 (1828).

A shrub or tree attaining a height of 25 m., with a dense round or flat-topped crown; second-year branchlets terete, brown, longitudinally striate or stringy-barked, sparingly sericeous or glabrous; ultimate twigs short, terete, towards the base, flattened at their extremities, densely silvery-sericeous and leafy; internodes often very short. Leaves sessile or subsessile, crowded and often whorled, oblong or obovate-oblanceolate-cuneate, rounded and subacute or apiculate, 3.5 to 10 cm. long, 0.8 to 3 cm. broad, membranous or thinly coriaceous, densely silvery-sericeous on both surfaces, lighter on the upper, darker and duller on the lower, the midrib raised on both surfaces with the 7 to 10 pairs of lateral veins, however, most conspicuous on the upper; margin plane. Racemes axillary, ascending, crowded, pedunculate, cylindric, 3 to 6 cm. long, 8 to 15 mm. broad, the entire inflorescence more or less silvery-sericeous; peduncle 1.5 to 2 cm. long. Flowers white, very shortly pedicelled; bracts linear-subulate, deciduous. Receptacle 6 to 8 mm. long, the lower part narrowly fusiform, the upper cupular, 4 to 5 mm. diameter, hairy within, with spreading triangular acute calyx-segments; disk with long hairs. Petals absent. Stamens glabrous, 4 to 6 mm. long. Style stoutly subulate, pilose towards the base. Fruit two-winged, pedicellate, ochre-brown, elliptic, often broadly truncately or emarginately cuspidate, abruptly truncate or attenuate at the base, 3 to 3.5 cm. long, 2 cm. broad, thickly and softly pubescent all over, or eventually sparingly puberulous, the body raised, the wings flat and 5 to 7 mm. broad; pedicel 2 to 3 mm. long, pubescent.

Sonder in Harv. and Sond., *Fl. Cap.*, II, 508 (1862); Lawson in Oliver's *Fl. Trop. Afr.*, ii, 416 (1871). Warburg *Kunene-Zambesi Expedition*, 221, t. 103 (1903). Burtt-Davy in *Transvaal Agricult. Journ.*, ii (1903-04), 278, t. 66, and v (1906-07), 424. Engler and Diels, l.c., 20, t. xiii, f.C. Sim *Forest Fl. Portuguese East Africa*, 64, t. lxiv, A (1909). Var. angolensis and huillensis, Hiern, *Cat. Afr.* Welw., i, 339, 340. 1898. T. angolensis, Hoffm. in *Linnæa*, xliii, 131 (1881). Welwitsch ex Ficalho in *Bol. Soc. Geogr. Lisb.*, ser. ii, 702 (1882). Terminalia nyassensis and T. Fischeri, Engler in *Pfl. Ostafrik*, C. 294. T. Brosigiana, Engl. and Diels in *Notizb. Kgl. Bot. Gart. Berlin*, No. 15 (1898).

Kalahari Region.—Transvaal, Aapjies River. Zeyher, 548. Burke (flow. and fruit. spec.), Boschveld, between Kleinsmit and Kameelpoort, Rehmann, 4836. Honeybird Creek, Barberton, 540 m., April, 1890. Galpin, 883 (fruit. spec.), Mountain pass near Nylstroom River, Aug., 1880. Nelson, 103 (fruit spec.). Rustenberg, Woodstock, 1200 m., Nov., 1903, Pegler, 2011 (flow. spec.), Springbok Flats, Jan., 1904, Burtt-Davy, 1205. Bechuanaland, plains north of the Moshoning River between Olive-tree Station and Lastwater Station, Oct., 1812. Buchell, 2330-2333 (immature flow. spec.), between Chue Vley and Moshoning River, Oct., 1812. Burchell, 2399 (immature flow. spec.).

Delagoa Bay Region.—Lourenço Marques, 45 m., Dec., 1897. Schlechter, 11,596 (flow. spec.).

Coast Region.—Albany Div., Grahamstown (collector unknown), (fruit. spec.).

A widely-distributed and variable species, extending along the east coast as far south as Grahamstown and northwards into Nyassaland, though not yet recorded for Natal; it occurs in the Kalahari region, extends into Bechuanaland, where both the ill-fated travellers Burchell and Holub discovered it, and attains to the west coast in German South-West Africa and Angola.

The species is known in the Transvaal as "Vaal Bosch,"* "Mawsawsso," or "Moumba" (Suaheli); in Gazaland as "Mususu"; the Delagoa Bay region as "Nkonola" or "Nkonono"; in Angola as "Musia"; in Portuguese East Africa as "Cunona"; and at Zomba as "Napini" or "Gum-Copal Tree." According to Burtt-Davy "the wood is very hard, burns well, and is described as oily; it is said to make good posts, durable underground, only the sap wood, of which there is very little, being eaten by termites or 'white ants.' The heart-wood is a pale, dull, yellowish colour; the bark pale and finely chequered. The wood is sometimes sold for fuel in the Pretoria market." Sim mentions that the tree is common in Portuguese East Africa and yields a dense yellow heart-wood with darker streaks, which takes a good surface and shows well under varnish; it weighs about 50 lbs. per cubic foot, and is used for felloes, furniture, planking, &c. The author states that it was the only indigenous timber in the wagon-makers' shops at Lourenço Marques.

* This name is also applied to Tarchonanthus camphoratus, a dioecious Composite, a shrub or small tree eagerly browsed by cattle, sheep and goats, and which is also a valuable source of forage during the winter and early spring, when grass is scarce.

Hiern, on the authority of Welwitsch, also mentions that the wood is used for the construction of various agricultural implements, carts and domestic utensils, in Angola. Swynnerton states that the bark has a curious netted appearance. The tree, on account of its silvery aspect, was identified by Livingstone† while travelling in Barotseland, with the Silver Tree (a Proteaceous tree of the south-western districts of Cape Colony), and Parker Gilmore was similarly misled, both these erroneous statements resulting in subsequent theories being propounded to account for so peculiar a distribution. Gall insects cause the occasional inflation of the twigs, and also result in curious octopoid tentacular growths replacing the fruit.

KEY TO SPECIES OF SOUTH AFRICAN COMBRETA.‡

I. Petals conspicuous, 5 to 8 mm. long. Flowers scarlet-red. Fruit five-angled.
- Leaves membranous; axil-tufts present; bracts 6 to 8 mm. long; stamens 7 to 10 mm. long.—(1) *bracteosum.*
- Leaves thinly coriaceous; axil-tufts absent; bracts 2 to 2.5 mm. long; stamens 15 to 17 mm. long.—(2) *Phillipsii.*

II. Petals minute, 0.6 to 2 mm. long; flowers whitish, yellowish, brownish or greenish.§ Fruit five-winged.

i. Petals reniform, obreniform, broadly elliptic or orbicular, as broad or broader than long.

(a) Petals terminated by long cilia.
- Leaves thinly coriaceous, not prominently reticulated dorsally, and either sparingly pubescent or glabrous.
- Dorsal axil-tufts present; fruit quadrate or orbicular, 2 to 2.7 cm. broad.—(9) *apiculatum.*
- Axil-tufts absent; fruit elliptic, 1 to 1.5 cm. broad.—(8) *Galpinii.*

(b) Petals glabrous or minutely ciliolate.
- Flowers carmine-red; petiole geniculate.—(18) *microphyllum.*
- Flowers whitish, brownish or greenish; petiole not geniculate.
- Leaves small, averaging 3 cm. long, coriaceous, glaucescent; axil-tufts absent.
- Pubescence persisting on the entire upper leaf-surface.—(2) *hereroense* v. *villosissimum.*
- Pubescence absent or confined to the sunken midrib of the upper leaf-surface.—(19) *transvaalense.*
- Leaves large, averaging 5 to 11 cm. long; upper surface dull dark green or fulvous.
- Membranous; thickly silvery lepidote and glabrous below, except for the axil-tufts.—(16) *Junodii.*
- Thickly coriaceous; ochre-lepidote and with thick soft fulvous indumentum below, or with the pubescence scattered on the midrib.
- Leaves glabrous or glabrescent on the upper surface at maturity. Fruit body not puberulous.
- Lower surface with the pubescence throughout. Fruit 1.6 to 2.3 cm. broad.—(3) *Gueinzii.*
- Lower surface with the scattered pubescence confined to the midrib and adjacent nerves. Fruit, 3.5 to 4.8 cm. broad.—(6) *pretoriense.*
- Leaves with the indumentum persisting on both surfaces. Fruit body puberulous.—(4) *holosericeum.*

ii. Petals spathulate, obovate, oblanceolate, lanceolate or cuneate, longer than broad.

(a) Leaves entirely glabrous at maturity or invested with axil-tufts.
- Leaves obovate to elliptic.
- Leaves small, 3 to 4 cm. long; thickly silvery lepidote above and

† Marloth, Das Kapland, 49, f. 1 (1907

‡ C. suluense, Engl. and Diels (17), and C. Nelsonii, mihi are omitted, owing to absence of flowers.

§ Excepting C. microphyllum, which has carmine-red flowers.



[*Photograph by H. N. King.*

FIG. 35.—CLIVEDEN: THE MARBLE FOUNTAIN NEAR THE TAPLOW ENTRANCE.

(See p. 66.)

below; axil-tufts absent; twigs ruby-red lepidote.—(2) *truncatum.*

Leaves large, 6 to 10 cm. long; axil-tufts present; twigs silvery or brownish lepidote.

Leaves thinly ochre-lepidote above and below; coriaceous; fruit orbicular, its body puberulous.—(11) *Kraussii.*

Leaves not obviously lepidote; papillate above, membranous.—(12) *Woodii.*

Leaves lanceolate; axil-tufts absent; receptacle pilose.—(13) *salicifolium.*

Leaves ovate to ovate-lanceolate; receptacle glabrous.

Axil-tufts absent; petiole 8 to 10 mm. long.—(14) *tenuipes.*

Axil-tufts present; petiole 2 to 3 mm. long.—(15) *patelliforme.*‖

(b) Leaves with the pubescence scattered or confined to the midrib, either above or below.

Leaves thickly coriaceous at maturity; axil-tufts present. Fruit large, glabrous, 4 to 6 cm. diameter.—(5) *Zeyheri.*

Leaves membranous or thinly coriaceous. Fruit small, 1 to 2 cm. in diameter; the body puberulous.—(7) *erythrophyllum.*

1.—COMBRETUM BRACTEOSUM, *Brandis* in *Engler and Prantl Pfl. Fam.* iii., 7, 125 (1893).

A loose, straggling, sparingly-leafy shrub, rarely exceeding 4 m. high; second and third year branchlets greyish, terete, longitudinally striate, glabrous, with prominent outstanding nodes and pubescent leaf-buds, the ultimate twigs angulate towards their extremities, greenish or brownish, and sparingly pubescent or pilose; internodes 1.5 to 5 cm. long. Leaves alternate, rarely opposite or ternate; petiole thickened and geniculate at the base, 0.5 to 1.5 cm. long, pubescent in the ventral groove, or wholly glabrous; leaf-blade ovate or ovate-oblong, acute, acuminate, or sometimes rounded or obtuse, 4 to 9 cm. long, 1.7 to 5 cm. broad (often smaller on the lateral flowering twigs), thinly membranous, equally pale green on both surfaces, or darker and wholly glabrous on the upper; distinctly papillate, the midrib and four to six pairs of lateral yellowish veins raised and prominent on the lower surface, the midrib bearded at the junction with the lateral veins, but otherwise destitute of hairs; margin recurved and faintly wavy. Spikes terminating long annual shoots, or axillary, disposed on very short lateral twigs, densely flowered, hemispheric or broadly ovoid or cylindric, 3 to 4 cm. broad, 2 to 6 cm. long, the peduncle compressed, short, densely foxy-pubescent. Flowers scarlet, subtended individually by conspicuous, shortly-stalked or sessile greenish ovate acute bracts, 6 to 8 mm. long, 3 to 4 mm. broad. Receptacle with the calyx segments 12 to 18 mm. long, its lower part narrowly ovoid, puberulous, lepidote, and twice or three times as short as the campanulate, somewhat constricted puberulous upper part, pilose at the constriction within; calyx-segments ascending, broadly triangular, acute, pubescent on the margins and within. Petals five, conspicuous, clawed, oblong and acute, 5 to 8 mm. long, 2 to 3 mm. broad, puberulous without, ciliate. Stamens 10, 0.7 to 1 cm. long; filaments scarlet. Style subulate, scarlet, overtopping the stamens; stigma minute. Fruit oval, obovate, or orbicular, obsoletely five-angled, light straw-coloured and glabrous. Engler and Diels in *Engler's Mon. Afrik. Pfl. Fam* iii (Combret) 95 (1899), t. xxviii., f.E.

Poivrea bracteosa: Hochstetter in *Flora*, xxvii, 424 (1844). Sonder in Harv. and Sond., *Fl. Cap.*, ii, 512 (1862). Wood, *Natal Plants*, i, 63, t. 77 (1899). Sim in Forest *Fl. Cap.*, Col., 223 (1907). Codonocrotus triphyllus: E. Meyer in *Drège Zwei Pfl. Geogr. Doc.*, 174 (1843). Codonocroton triphyllum: E. Meyer ex Sonder, l.c.

Eastern Region.—East London. Between bushes at the mouth of the Kahoon River, Nov., 1882. Leighton, 146 (flow. specimen). Natal, Gerrard and McKen (flow. spec.). Gerrard, 419 (flow. spec.). Sanderson, 182 (flow. spec.). St. John's River, Oct., 1859, Sutherland (flow. spec.). Port Natal, Plant, 41. Krauss, 350 (flow. spec.). Inanda, Sept., Wood, 226 (flow. spec.). At Durban, Oct., 1888, Wilms, 1917 (flow. spec.). Somerset, Bowker (flow. spec.).

A beautiful shrub, not unlike Greyia Sutherlandii when in bloom, its trusses of scarlet flowers forming a conspicuous feature of the landscape of the coast districts of Natal in the months of September and October. It occurs as far south as the East London Division, and has been recorded from Pondoland, but is everywhere sparingly distributed. Drège discovered it between the Umtata and Umzimvubu rivers, at elevations of 300-600 m., but invariably the plant prefers lower elevations, and is seldom found far inland. The species is evidently a shy fruiter, as I have not observed any specimen, but Wood states that the wingless fruit is palatable, and, on account of its producing violent hiccoughing when eaten, is known locally as the "Hiccup Nut." *R. A. Dümmer.*

(To be continued.)

‖ Pubescence persists on the midrib in this species.

THE ROSARY.

TRIALS AT BAGATELLE.

PARTICULARS have just reached us of the Rose trials to be held at Bagatelle (France) this year as usual. For the information of those desiring to send varieties, we append the following directions.

Roses for competition must be novelties, and at least five specimens of each sort in pots should be sent, not later than April 15, addressed to "Monsieur le Conservateur des Promenades de Paris, Roseraie de Bagatelle, au Bois de Boulogne, En gare de Neuilly-Porte-Maillot-Paris, France." They must be accompanied by a description of their origin and parentage, and particulars of any special treatment they may require. The plants will be placed in the open ground as soon as they arrive at Bagatelle, and will remain in the same place until October, 1914, in order that the judges may observe their habits and flowering qualities during two seasons.

The following is a list of varieties that have gained prizes at previous competitions :—

YEAR.	AWARD.	NAME OF ROSE.	NAME OF WINNER.
1907	Gold Medal	Marquise de Sinety	Pernet-Ducher, Lyons.
	Classed	Mme. Edmond Sablayrolles	Bonnaire, Lyons.
	Classed	Mme. Constant Soupert	Soupert & Notting, Luxemburg.
	Classed	Mrs. Peter Blair	A. Dickson & Sons, Ireland.
1908	Gold Medal	Rhea Reid	The E. G. Hill, Co., Richmond, U.S.A.
	Bronze Medal (Minister of Agriculture)	Dorothy Page Roberts	A. Dickson & Sons, Ireland.
	Bronze Medal (Hort. Soc. of France)	Mme. Segond-Weber	Soupert & Notting, Luxemburg.
	Bronze Medal (Rose Section of N.H.S.)	Mrs. Dudley Cross	W. Paul & Son, Waltham Cross.
	Bronze Medal (Rose-lovers' Society)	Frau Oberhofgärtner Singer	P. Lambert, Germany.
		(NOTE.—After 1908 no Bronze Medals were awarded.	
1909	Gold Medal (French Roses)	Lyon Rose	Pernet-Ducher, Lyons.
	Gold Medal (Foreign Roses)	Mme. Segond-Weber	Soupert & Notting, Luxemburg.
1910	First Class Certificate	Molly Sharman Crawford	A. Dickson & Sons, Ireland.
	Certificate	Mlle. Marie Mascuraud	P. Bernaix Fils, Lyons.
	Certificate	Lady Alice Stanley	S. McGredy & Sons, Ireland.
	Certificate	Commandeur Jules Gravereaux	Croibier, Lyons.
1911	Gold Medal (French Roses)	Beauté de Lyon	Pernet-Ducher, Lyons.
	Gold Medal (Foreign Roses)	Jonkheer J. L. Mock	Leenders & Co., Holland.
	First Class Certificate	Viscountess Enfield	Pernet-Ducher, Lyons.
	Certificate	May Miller	E. G. Hill, Richmond, U.S.A.
	Certificate	William Speed	A. Dickson & Sons, Ireland.
	Certificate	Désiré Bergera	Barbier & Cie., Orléans.
1912	First Class Certificate	Mme. Jules Bouch	Croibier, Lyons.
	Certificate	Frau Margarethe Möller	Poulsen, Copenhagen.
	Certificate	Orléans Rose	Levavasseur, Lyons.

FRUIT FARMING IN 1912.*

A DIVERSITY of opinion is expressed amongst farmers as to whether 1911 or 1912 was the worst for their interests. Most know by now what 1911 did for them, but have learnt in part only the results of 1912. Two seasons more diametrically opposed to one another would be hard to imagine.

It is mere waste of time to regret what cannot be avoided; the best course is to look for the bright spots under gloomy circumstances, and make the most of them.

Thanks to the open winter of 1911, farmers managed to pull their stock through with the minimum of fodder, and though the cereal returns were below average in quantity, the increased prices made some amends. The prices of all fat stock, except pigs (now golden again) were of a fairly high level.

1912 has given the lie direct to the old adage of the "early bird catching the worm," for both the late planter, haymaker, and harvester came off best in that year. There is an abundance of inferior Hay to be consumed, which will benefit no one but the veterinary profession. The cost of harvesting all crops was from three to four times as much as in 1911; the foul condition of all arable land is deplorable, and will take more than one fair season to overcome. The yield of Corn, except a few crops of Beans, is generally bad, and the quality worse.

Hop growers have had a most varied experience; those farming on the lighter land growing more and those on the heavy land considerably less than in 1911. The prices have fallen to about half what they were in 1911, entirely owing to the foreign importations, from which we were for once spared in 1911, being actual exporters to a large extent in that year of grace.

Fruit growers have had, in spite of the wretched summer, a fairly good year; for soft fruits there is an increasing demand, and the home producer has to some extent an unhampered market. Strawberries were very short; Black Currants variable. Personally, I grew at the rate of from three tons down to half a ton per acre in the same field, all manured alike. Loganberries were a heavy crop; Plums very fair in quantity and price.

By fruit-growers in the foregoing sentence, I mean men who make a business of growing fruit, both hard and soft, on scientific lines. The man who simply gathers the fruit off the trees (or as often as not, off the ground) planted by his predecessors, has had a most plentiful crop and very low prices.

It will be a grand day for the British fruit-growing industry when most of the old varieties of Apple and Pear trees are converted into cord wood, for with the exception of the Blenheim, Ribston, King of Pippins, and one or two others, there is none in the same category as the fruit sent here by our foreign competitors, and it is this competition which we can and must combat successfully.

At the Kent Commercial Show of Apples and Pears, held at Maidstone last October, 1,200 boxes were exhibited, holding approximately 40 lbs. each of Apples and 20 lbs. of dessert Pears. This show marks an epoch in the history of Apple production and packing in this country, and following such a season as 1911, had to be seen to be realized.

Amongst the many Colonial and foreign fruit-growing visitors who were at the show, one remarked to me, "If you can really do this every year, I can only say that this is the beginning of our end." I replied that, in my opinion, we could do it every year, and we will do it. We Britishers are rather slow starters, but generally get there at the finish.

To my mind a far greater bugbear to the industry than the foreign competition is the dumping of our own wretched stuff on the markets—

* Madresfield Agricultural Club's Quarterly.

three-quarters of it of bad varieties, badly picked, diseased, unpresentable, and often dishonestly packed in antiquated and unsuitable receptacles, the pot hamper being the very worst imaginable. It may appear uncharitable, but I venture to hope that soon such stuff will not pay marketing expenses.

It may be news to many that a successful start was made this year of exporting Apples—20 tons of Worcester Pearmain—properly packed in boxes to South America. But the leopard—in the form of a British fruit trader—being unable to change his spots, hearing of this success, immediately set to work to buy up inferior Worcester Pearmains, pack them anyhow, and export them to S.A., fortunately with disastrous financial results, but unfortunately giving the British export fruit trade a black eye in its infancy. Perhaps some day we may hope for export fruit inspectors, as in all fruit-exporting countries.

Perhaps I should point out an apparent incongruity in my foregoing remarks on foreign importations. In the case of fruit, there is practically an unlimited home demand, while for Hops the demand is strictly limited. *F. P. Norbury.*

DESTRUCTIVE INSECTS AND PESTS

SCHEDULED BY THE BOARD OF AGRICULTURE AND FISHERIES.*

V.—THE SAN JOSÉ SCALE INSECT.

The insect now to be considered is a member of the family Coccidæ, of the sub-division Homoptera of the Hemipterous insects.

It may safely be affirmed that the insect (Aspidiotus perniciosus, Comstock) to which the name of San José scale (pronounced, says an American publication, Săn Hō-saý) has been given, is one of the most harmful of all insect pests. The specific name appears to have been given to it by Comstock in 1880 in recognition of its very harmful character, and led to the trivial name of "pernicious scale," while the U.S. Department of Agriculture proposed the name of "Chinese scale," which has not, however, replaced the term "San José scale," after the valley in which the pest was first found. The pest appears to have been introduced into the United States viâ California about 1870, but the original home of the scale does not seem to be known with certainty, some authorities attributing it to Japan and others to China; investigations conducted by Dr. Marlatt, of Washington, indicating China as its source. Enormous damage has been done by this scale insect in America, the minute insects in their myriads attacking and sucking away the juices of the bark, leaves, and fruit of a number of species of deciduous trees. It is readily distributed by means of infested nursery stock, and by the wind, insects, birds and wild animals.

The male insect is minute and gnat-like, and occurs beneath an oval-shaped scale about one-thirtieth of an inch long and half as broad. It has two delicate wings, a pair of long antennæ, and an anal style. "The adult males usually have the mouth parts replaced with a third eye." The female scale is much larger, about one-eighth to one-twenty-fifth of an inch in diameter, circular, and with a prominent nipple. Howard says that the female scale is "flat, pressed close to the bark, resembles the bark of the twigs in colour, and, when fully grown, is about one-eighth of an inch in diameter." The mature female beneath the scale is small and yellowish, and contains a number of mature eggs or young embryos. It is fixed to the tree beneath the scale by long, thread-like sucking mouth-parts. The young larvæ are extremely minute (about one-hundredth of an inch long), yellowish or orange in colour, and six-legged. For a time they remain beneath the shelter of the female scale, and then wander free over the bark for an hour or so to a couple of days (Missouri *Bulletin*, No. 98, 1912); after this they settle down, insert their proboscis into the bark and draw up the sap. The appendages are now lost, and a waxy secretion is produced on the back of the larva, completely covering the insect in perhaps 24 hours from the time of insertion of the proboscis, and soon developing into a scaly protective covering, which gradually becomes dull darkish-grey to light-grey, toning with the bark. The male and female are produced after various moultings.



FIG. 36.—SAN JOSÉ SCALE, ASPIDIOTUS PERNICIOSUS.

(*a*). Ventral view of larva, showing proboscis; (*a*'), enlarged antennæ of *a*; (*b*), back of larva, with wax exuding; (*c*), female from scale with young insects showing through body wall of parent; (*d*), male; (*e*), scale formed by female; (*f*), scale-infested Pear. (*a* to *e* after Howard and Marlatt, U.S. Dept. of Agriculture, Bur. Entom., *Bul.* 62, and greatly enlarged.)

The females are stated to reach maturity when 36 days old, and then produce an average of eight or ten young daily for six weeks. The young larvæ are thus mature in little over a month, and as young are produced all the summer, there are no clearly-defined broods, but all stages of the insect may be found side by side. More females than males are produced; of every three or four hundred young, at least two hundred are females. A proportion of the insects survive the winter under their scales to continue the species, adults and very young larvæ apparently dying in late autumn. Since, in America, four or five generations are produced each year, it has been estimated that one winter female may be the progenitor of perhaps 3,000,000,000 scale insects in a year. It is clear, therefore, that the eradication of a pest such as this is an important matter.

The species of plants attacked include the Pear, Apple, Plum, Peach, Apricot, and Black Currant. Bark, leaves and fruit are all attacked, and the sucking away of the plant juices causes immense loss in bad cases. Theobald, who gives an account of this insect in his *Insect Pests of Fruit*, states "that the San José scale is sent to this country there is no doubt, a very meagre and cursory examination having revealed its presence on Pears." Suspected cases should at once be reported to the Board of Agriculture and Fisheries, and specimens should be sent.

It is stated that the San José scale is quite easily controlled by thorough spraying with proper apparatus, though the scale is very resistant. Fumigation is also very successful in destroying the pest, even on large bearing trees in orchards, though the expense of treating such trees is exceptionally heavy. Two classes of washes are employed—oil washes and lime sulphur washes. Fumigation is carried out with hydrocyanic acid gas. *H. C. Long.*

* Previous articles appeared on September 28, October 12, November 2, and December 7, 1912.

The Week's Work.

FRUITS UNDER GLASS.

By JAMES WHYTOCK, Gardener to the Duke of BUCCLEUCH Dalkeith Palace, Midlothian.

COLD FRUIT HOUSES.—Peaches, Nectarines, Figs and the choicer varieties of Plums and Pears may be grown successfully in unheated houses in warm districts, but in colder localities artificial heat is necessary in severe weather during the late spring as well as in the autumn to assist the wood to ripen. Owing to the mild winter, the buds are unusually forward, and, whilst an endeavour should be made to retard growth by opening the ventilators to keep the house cool, the work of pruning and cleansing the trees should be completed. Any trees that are infested with red spider should be treated with a nicotine insecticide, whilst Plum or other trees infested with brown scale should be sprayed with a weak mixture of paraffin, soap and water. Cleanse the woodwork thoroughly with soapy water and paint or limewash the walls. Examine the inside border to see if water is necessary. Young Peach or Plum trees that are growing too vigorously should be replanted. Remove the soil from the roots with care and make incisions in the stronger roots to cause fibrous roots to develop. In replanting keep the roots near to the surface. Trees in full bearing, and especially those which bear stone fruits, should be top-dressed with animal manures and lime in some form.

EARLY FRUIT HOUSE.—Guard against fluctuations in the temperatures when the weather changes. Fire-heat should not be used to excess, rather allow the temperature to drop a few degrees in the early morning, as the necessary warmth is quickly obtained as the day advances. During times of bright sunshine, dispense as much as possible with fire-heat; but it is necessary, even in very cold weather, to afford ventilation, so that the air in the house is changed daily. On such occasions, the small ventilators should be used, but during mild weather the ordinary ventilators may be employed. In vineries where early permanent vines are on the point of flowering, the atmosphere should be caused to circulate by admitting air both by night and day. The mean temperature of the vinery should be 65°, but the thermometer may be allowed to rise 15° or 10° during the day time. Promote sufficient atmospheric moisture by damping the paths and bare spaces. Vines in pots, with the bunches set and thinned, should be grown in a minimum temperature of 60° and a moist atmosphere. As the pots are plunged in heating materials, the watering will need to be done very carefully, affording weak liquid manure and vine manure dissolved in water, as the plants will need stimulants. The earliest Peaches are swelling, and the trees should be syringed at least once a day: on sunny days they may be syringed in the morning and again early in the afternoon, but do not wet the trees too much in cold, dull weather. The mean temperature should range from 55° to 60° according to the weather.

PLANTS UNDER GLASS.

By F. JENNINGS, Gardener to the Duke of DEVONSHIRE, Chatsworth, Derbyshire.

ORNAMENTAL GRASSES.—Where large quantities of ornamental grasses such as Eulalia japonica zebrina, Carex japonica varigata, Isolepis gracilis and Bamboos are required for decorative purposes the plants should be attended to at once. As a rule specimens in small pots are most in demand for decorations. The old plants should be divided carefully, and suitable portions potted in a mixture of rich, fibrous loam, leaf-mould, sand, charcoal or wood ashes, and a little dried cow-dung with a sprinkling of fine bones. Grow the plants in a stove temperature. Soak the roots thoroughly with water, and syringe the foliage.

THE CONSERVATORY.—Plants of Bouvardia, Hibiscus, Abutilon and similar subjects growing in borders and intended for flowering in autumn should be pruned, if the work has not been done already. The growths of the Bouvardias should be cut back so as to form spurs with only two or three buds. Palms should be cleared of scale insects. The simplest way of doing this is to syringe the leaves with soluble paraffin about once a week in the evening, syringing again with clear water the first thing the following morning. Feed the roots with soot water and Clay's fertiliser. Plants that require potting should be attended to at once, employing rich loam, leaf-mould, wood ashes and sand for the rooting medium. If the ball of soil is dry, let it be thoroughly soaked in a bucket of water before the potting is done. Specimens that do not require repotting should be fed with stimulants about twice a week. The long growths on Cobæa scandens trained on the roof should be removed and the plants cleansed thoroughly. Suitable young growths should be trained into position. If a stimulant is required, liquid manure may be afforded. Established plants of Camellia growing in the borders should receive a top-dressing of rich loam mixed with a liberal quantity of cow manure. The roots should be well watered, and, as soon as the flowers are over and fresh growth appears, the house should be fumigated to destroy the black fly which infests these plants. If practicable, syringe the foliage by means of a hose-pipe in the mornings and afternoons. Camellias growing in tubs should be treated in much the same way, but instead of applying a top-dressing feed the roots with liquid manure.

SAINTPAULIA IONANTHA.—This plant may be propagated from leaves inserted in sand in any corner of a hot-bed or propagating frame or even on the stage of a stove or propagating house. See that the base of the leaf is well pressed on to the sand. When the young plants are well rooted they should be potted singly into 60-sized pots in a mixture of equal parts loam and leaf-mould mixed with a little coarse sand. At that stage the plants should be grown in the intermediate stove. They will produce an abundance of their beautiful blue flowers in the autumn, and are very effective arranged on the edges of the staging with Panicum plicatum.

THE FLOWER GARDEN.

By EDWARD HARRISS, Gardener to Lady WANTAGE, Lockinge, Berkshire.

THE HERBACEOUS BORDER.—If the herbaceous borders were not attended to in the autumn, the work should be done as soon as the weather is favourable. It is not necessary to lift all the plants annually, but they should be transplanted every three or four years, trenching the ground thoroughly before the borders are made up afresh. Many of the subjects may need to be restricted, and last year's arrangements somewhat modified. Nearly all the plants in herbaceous borders are gross feeders, and require to be grown in deeply-cultivated, well-manured ground; in poor soil they are soon affected by drought in the summer time. October is the most suitable month for rearranging the border, for the height and habit of the various subjects are then readily seen. If it is intended to replant the whole of the border, the clumps should be taken up, and the ground trenched to a depth of 3 feet, mixing plenty of well-decayed cow manure, soot and lime with the soil as the work proceeds. As soon as the ground has been got ready, the planting should be proceeded with. If trees or shrubs are employed as a background up to the border, their roots should be cut back somewhat at the time of trenching, or they may rob the borders of moisture and nourishment. Certain plants grow very large in the course of two or three years. These should be divided and portions growing on the outside selected for replanting. There is a danger in narrow borders of employing too many varieties, causing the border in summer to be crowded with an endless variety of plants. Space should be left between the permanent subjects for planting in summer—Antirrhinums, Phlox Drummondii, Calceolarias, Lavateras, Centaureas (Cornflowers), annual Chrysanthemums, Sunflowers of sorts, Salvia Glory of Zurich, and other varieties of Salvia; Salpiglossis, Eschscholtzias, Coreopsis, Cosmeas, Clarkias, Godetias, Cannas, Zinnias, Asters, Alonsoas, Campanula pyramidalis, Kochia trichophylla, Nemesias, Nicotianas, Pentstemons, and Verbenas. Most of these plants are annuals, and may be employed with good effect in the mixed border. I do not advocate the inclusion of ordinary bedding plants, such as Pelargoniums, Heliotropes, and Marguerites, as there will be plenty of variety without them. The taller plants must necessarily be placed at the back of the border, but the middle and front portion should not be too formal, and the best effect is obtained by intermixing a few of the taller plants with the shorter ones. Such plants as are chosen for this purpose should be of a choice character, as they will occupy very prominent positions.

SEED SOWING.—It is time to sow certain annuals. Seeds of East Lothian Stocks should be sown in well-drained pans, filled with a light compost. When large enough for transplanting, the seedlings should be potted singly into 60-sized pots, and kept growing actively nearly to the roof-glass in a cool pit. Later on they will need hardening preparatory to placing them out-of-doors. Antirrhinums should also be sown; the tall and intermediate varieties are the most useful for the flower garden. Sow also Arctotis, Lobelia, Salpiglossis, Heliotrope, Dianthus, and annual Carnations, which are easily cultivated, and very useful for decorative purposes indoors.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir TREVOR LAWRENCE, Bart., Burford, Dorking.

DECIDUOUS CALANTHES.—All the early flowering varieties of the vestita section of Calanthes having passed out of bloom, the plants should be afforded a short period of rest, withholding water at the roots and arranging the plants closely together on a dry shelf or a stage in a house where the temperature does not fall much below 60°. A dry position in the Cattleya house is suitable, for then they will obtain plenty of sunlight, necessary to mature the pseudo-bulbs perfectly. Allow the plants to remain in this house until new growths begin to develop at the base of the young pseudo-bulbs, when it will be necessary to repot them. Calanthes of the Bryan and Wm. Murray sections are in full flower; the inflorescences are very useful for furnishing cut blooms for decorative purposes. The flowers of C. Regnieri, C. Sanderiana, C. Stevensii, C. Williamsii, and the pure white C. nivalis are expanding and, with care, will continue in bloom until April. A little water may be afforded the plants occasionally, taking care not to saturate the soil. When the last flowers are opening water should be withheld entirely. The flowers of these late-blooming species are not seen to advantage when the plants are stood on an ordinary stage. unless the spikes are bent over and tied down. My practice is to stand the plants upon the floor in one corner of the house in company with Cyperus alternifolius and Ferns.

CATTLEYAS AND LÆLIAS.—Plants of C. Lawrenceana, having completed their growth, should be kept drier at the roots; if the soil is allowed to become excessively wet decay will arise in both the leaves and pseudo-bulbs. Arrange the plants well up to the roof-glass. Plants of C. Percivaliana, C. chocoensis, C. amethystoglossa, C. Leopoldii, C. Trianæ, and its varieties are pushing up their flower-spikes, and should be afforded an increased amount of water at the roots, but moisture should be withheld when the blooms are fully expanded, continuing the treatment until fresh growth appears. These remarks apply to several hybrid Cattleyas and Lælio-Cattleyas that are also about to flower. The roots of dormant Cattleyas, Lælias, and their hybrids should be kept comparatively dry until the flower-spikes develop or growth recommences, remembering that well-matured specimens require only a small amount of moisture to retain their pseudo-bulbs in a plump condition. Plants of C. Mossiæ and C. Mendelii are in the resting stage, and, notwithstanding that certain of them are developing a number of fresh roots, must still be watered with extra care. Afford each plant only a very moderate quantity of moisture whenever the compost becomes quite dry. C. Warscewiczii (syn. C. gigas), C. Rex, C. Dowiana and its variety aurea, also the hybrid C. Hardyana should be kept at rest for as long as possible. One of the principal details to observe when these plants are at rest is to afford them all the light



Photograph by H. N. King.

SUMMER-HOUSE AT CLIVEDEN, THE RESIDENCE OF MR. WALDORF ASTOR, M.P.

possible and plenty of fresh air; the latter not only by day but at night also. At Burford, whenever the thermometer out-of-doors registers between 40° and 50° during the evening, and is not likely to fall below 40°, we open all the lower ventilators wide, maintaining a temperature in the house between 55° and 60°, principally by fire-heat. If the weather appears likely to become colder during the night Archangel mats are rolled along the eaves of the roof, which is the coldest part of the house, and, during times of frost, or when cold winds prevail, the mats are spread their full length up each light. When the wind is very boisterous the lattice-wood blinds are rolled down, thus making them secure and preventing them from being blown off. At the same time as much air is admitted through the bottom ventilators as is practicable. By these means plenty of fresh air is admitted to the house at all times. By employing thick covering material on the glass during very cold weather the amount of fire-heat may be reduced considerably. Experienced growers know well that excessive fire-heat is frequently the cause of deterioration among the plants, and its too free use should be prevented by every means possible. During mild, sunny days the top ventilators may also be used to advantage, but cold draughts in a direct line with the plants should be avoided.

THE HARDY FRUIT GARDEN.

By B. Goodacre, Gardener to Sir Ernest Cassel, Moulton Paddocks, Newmarket.

Wall Trees.—There is a great diversity of opinion as to which is the better method of attaching fruit trees to walls. Some advocate the use of shreds and nails, others wires attached to the walls. Each system has certain advantages, and the grower must be guided in the matter by the situation of the wall or garden. Well-wired walls are cleaner, as the rains and syringings wash the brick-work; whilst nailed branches catch and hold filth that falls from branches above. A wired wall is neater in appearance, and galvanised wire should be used. The tying and cleansing of trees may be done quickly and easily when wires are employed. But branches nailed to the wall are warmer. In cold districts the wire has been known to cause the young green bark of Peaches and Apricots to shrivel for an inch from the junction, with bad results. This is due to the wire becoming frozen. Some advise placing the wire so close to the wall that it becomes almost a part of it, but this is not to be recommended. Whilst the weather remains favourable push on with the work of pruning, cleansing, tieing, and planting of the trees.

Apricots.—The Apricot is the first fruit tree to flower, therefore it should be the earliest to receive attention. If the young shoots were pinched in the summer very little young wood will need to be removed now. As a rule the general crop is produced on two-year-old wood, but clean, well-coloured fruits are often developed on shoots of the previous season, especially after a hot summer, and on trees grown under a wall case, for in such circumstances the wood becomes well ripened. Weakly growth should be removed entirely, and strong leading branches trained in their full length where space permits. Many growers object to long spurs because of their unsightly appearance, but they can always be kept thinned, and the longer ones shortened to a suitable spur at the base. Apricots will not thrive unless the drainage is efficient, and it is always advisable when planting to keep the roots well to the surface. A top-dressing of rich loam, mixed with some stimulant, should be afforded old trees in full bearing, but it is not advisable to feed young trees, as this would result in gross wood that is very liable to gumming.

Peaches and Nectarines.—It is a good plan to loosen the trees from their supports, allowing them to hang a little away from the wall. This will retard the flower-buds, and give the tree a longer period of rest. As in the case of the Apricot, if the trees were carefully disbudded and pinched in the summer, little pruning will be necessary now, with the exception of removing old fruiting wood where it can be replaced with young shoots. The latter may be trained in their full length if they are well ripened. Aim at keeping the tree furnished all over with fruiting-wood, especially in the lower and centre parts, where the knife should be used sparingly; but cut back the strong top branches to well-placed side growths.

THE KITCHEN GARDEN.

By John Dunn, Foreman, Royal Gardens, Windsor.

Horseradish.—This plant delights in a deep, rich soil and a rather moist situation. The ground should be treated in the same manner as for Rhubarb. If young, clean roots have been selected for the purpose, they may be planted in rows 2 feet apart and 9 inches asunder, or small crowns may be dropped into holes made by an ordinary garden dibber. If this latter method is adopted entirely new growth is made, but the crop is longer reaching maturity.

Jerusalem Artichokes.—The crowns should be lifted and stored in a dry shed until required for use. A part of the crop may be placed in mounds in the open and covered in the same way as are Potatos. Whilst the crop is being lifted sufficient medium-sized tubers should be selected for forming new plantations, which may be made at once. Any out-of-the-way part of the garden will be suitable, provided the soil is in a good condition. Allow a distance of 4 feet between the rows and 18 inches between the individual plants.

Digging and Trenching.—The wet weather has rendered ground operations almost impossible, especially on heavy land. Take advantage of every favourable opportunity to proceed with the work, so that it may be completed by the end of February. Vacant ground should be thoroughly broken up and exposed to the influence of the weather; this is of great importance in the case of land on which small seeds are to be sown.

Parsnips.—Ground intended for this crop having been trenched early in the winter, should be forked over on the first favourable opportunity. Make the soil as fine and level as possible, so that it will require little further preparation beyond raking the surface with a wooden rake, before the drills are drawn. Parsnips should be sown as early in February as the state of the soil will permit, but it is better to delay sowing for a week or two than to trample on the ground whilst it is wet. Draw the drills at 18 inches apart, and sow the seeds carefully on a quiet day, as they are easily blown away by the wind. As soon as the seedlings are large enough to handle they may be thinned to 6 inches apart; at the second thinning the alternate plants should be removed, thus leaving the crop 1 foot apart in the row. If exhibition roots are required, pulverise the ground thoroughly, and, after setting the garden line, bore a number of holes at 18 inches apart. Fill the holes with fine soil, and insert three seeds at each station. When the seedlings are large enough, they may be thinned, leaving the strongest plant in the middle of each station. Slugs are often troublesome to the young plants, but they may be kept in check by frequent dustings of soot and lime, applied in the early morning. Parsnip roots still in the ground should be lifted before growth commences and stored in a cool place. Cover the roots with fine soil to keep them plump.

Asparagus.—The beds should be forked over as lightly as possible, taking care not to injure the crowns. Undecayed manure on the surface should be removed and dug into the alleys: this will lighten and enrich the soil for future top-dressing. As the work proceeds, some of the finest soil may, if necessary, be placed over the crowns, regulating the quantity by the amount of covering already over them. When the work is finished the crowns should not be lower than 6 inches from the surface, whilst the soil should be light and rich.

Shallots and Garlic.—A plantation of Shallots should be made as soon as the soil is in a workable condition, choosing a light, sandy border. If drills are drawn 1 foot apart, the bulbs may be pressed into the soil and covered until the tops are just visible above the ground. Nothing more will be necessary until growth commences, when the soil between the rows should be lightly stirred with a Dutch hoe. Garlic should also be planted, allowing a space of 18 inches between the rows.

THE APIARY.

By Chloris.

Seasonable Hints.—Owing to the wet, warm weather the bees have no doubt consumed a considerable quantity of food, for breeding will have begun. Where there is any doubt about an insufficiency of food soft candy should be given. Syrup must not be used yet, because it will stimulate the queen to ovipositing, and breeding must not be artificially encouraged. Place the cakes of candy under the quilts; at the same time examine the latter to make sure they are dry. If they are wet replace them by dry ones, taking care to leave no gaping corners. If the roofs are leaky, make good the cracks, for dampness is the cause of dysentery.

Choosing the Hive.—Everyone has experienced a difficulty in this respect. No beginner should choose a double hive, as it is difficult for even an expert to manage, and its advantages are of a very doubtful character. Single hives, with double walls of the "W.B.C." type, will be found most useful, and give the greatest return per hive when carefully managed. Being double, the inner portion inhabitated by the bees remains drier than is the case with single-walled hives. The empty space between the two walls tends to retard the loss of heat by conduction, for air is a bad conductor. Similarly, the double walls tend to keep down the temperature in the very hot weather for the same reason.

Preparation for the Spring.—It is a very good plan to wash all floor-boards with some disinfectant, such as Izal or Jeye's Fluid, in readiness for the spring cleaning, so that those in use may not only have a good scraping to rid them of the refuse which has collected during the year, but that they may also be disinfected before being used again. To keep bees in a healthy state, constant attention must be given to cleanliness. Those beekeepers who have no spare floor-boards would be well advised to make several at once before the busy season arrives. Many complain of their bees swarming just when the honey-flow is at its highest, but they never consider its cause. It may be prevented by giving more room, either above or below, and by more room I mean more breeding space. When the crowded hives are examined it will be found that all the frames are crowded with brood. To avoid this make extra brood chambers, to be placed under the full one, and to make sure of the bees working there find the queen and place her below in the new brood chamber, and over it place queen-excluder zinc. By making the brood chambers now much disappointment will be saved during the coming season, beside doubling the yield, for after the brood hatches the bees will fill the cells with honey, which can be extracted, and the drawn-out combs will be of great benefit at the end of the season if it be possible to secure driven bees, for they can quickly fill them with syrup, and thus be ready for the winter as early as the established stocks.

Making a Start.—Those who are thinking of making a start with this fascinating hobby will be considering the site. Unfortunately many novices choose the wrong spot, and as a consequence give up because the bees are an annoyance to neighbours or passers-by. Choose a south or south-east aspect where there is good shelter on the north and east. Shelter may be formed by a wall, boards, high bank, or a good hedge. The spot should be one little frequented by passers-by, because vibration disturbs the bees at a time when they need to be quiet. Further, during a lull in the honey-flow, persons moving about near hives cause the bees to become vicious. The ground in front of the hive should be free from grass and weeds, because when returning heavily laden with honey and pollen, bees often fail just near home, where the cold soil or vegetation chills them and they perish. Grass and weeds form a good shelter for toads, the great enemy of the bees, for they eat all that come within their reach. Never allow hives to receive the drip from trees. If a good thick layer of ashes be spread on the cleared ground it can be kept clean with the aid of weed killer or the flat hoe. If four stout, tarred stakes be driven into the ground, and four battens be nailed on them, they will provide a good level stand, to which the hives may be secured by ropes during stormy weather.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

APPOINTMENTS.

SATURDAY, FEBRUARY 1—
Soc. Française d'Hort. de Londres meet.
MONDAY, FEBRUARY 3—
Nat. Chrys. Soc. Ann. Meet.
TUESDAY, FEBRUARY 4—
Roy. Hort. Soc. Coms. meet. (Lecture at 3 p.m. by Mr. C. F. Ball, on "Plant Hunting in Bulgaria.") Hort. Club Ann. Meet. and Dinner. Scottish Hort. Assoc. meet. Roy. Inst. meet. (Lecture by Prof. W. Bateson.)
THURSDAY, FEBRUARY 6—
Linnean Soc. meet.
FRIDAY, FEBRUARY 7—
Roy. Gard. Orphan Fund Ann. Meet. and Election of Orphans at Simpson's Restaurant, Strand, at 3 p.m.
MONDAY, FEBRUARY 10—
United Hort. Ben. & Prov. Soc. meet.
TUESDAY, FEBRUARY 11—
Roy. Hort. Soc. Ann. meet. Roy. Inst. meet. (Lecture by Prof. W. Bateson.)
FRIDAY, FEBRUARY 14—
Roy. Inst. meet. (Lecture by Prof. Andrew Gray.) Finchley Chrys. Soc. Ann. Meet.
TUESDAY, FEBRUARY 18—
Roy. Hort. Soc. Coms. meet. (Lecture at 3 p.m. by Miss Mason, on "Some Flowers of Eastern and Central Africa.") Roy. Inst. meet. (Lecture by Prof. W. Bateson.)
WEDNESDAY, FEBRUARY 19—
North of Eng. Hort. Soc. Ann. Meet. and Sh. at Leeds. Roy. Meteorological Soc. meet.
THURSDAY, FEBRUARY 20 –
Linnean Soc. meet.
FRIDAY, FEBRUARY 21—
Madras Agri-Horticultural Soc. Sh. (2 days).
MONDAY, FEBRUARY 24—
Surveyors' Inst. meet; Ann. Dinner at 7 p.m.
FRIDAY, FEBRUARY 28—
Roy. Inst. meet. (Lecture by Mr. C. T. R. Wilson.)

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich—39·5.

ACTUAL TEMPERATURES:—
LONDON.—*Wednesday, January 29* (6 P.M.) Max. 46°; Min. 42°.
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—*Thursday, January 30* (10 A.M.): Bar. 29·6°; Temp. 46°; *Weather*—Dull.
PROVINCES.—*Wednesday, January 29:* Max. 46° Bantry; Min. °42 Aberdeen.

SALES FOR THE ENSUING WEEK.

MONDAY AND WEDNESDAY—
Roses, Fruit Trees, Perennials, Bulbs, &c., at Stevens's Auction Rooms, 38, King Street, Covent Garden, at 12.30.
MONDAY AND FRIDAY—
Herbaceous Plants and Hardy Bulbs, at 12; Roses, and Fruit Trees, at 1.30; at 67 & 68, Cheapside, E.C., by Protheroe & Morris.
WEDNESDAY—
Perennials and Herbaceous Plants and Hardy Bulbs. at 12; 2,217 cases Japanese Lilies, at 2.30; Trade Sale Miscellaneous Bulbs, at 11; Palms and Plants, at 5; at Protheroe and Morris's Rooms.
THURSDAY—
Special Sale of Roses and Fruit Trees, at 1; at Protheroe & Morris's Rooms.
Sale of Greenhouses, Piping, Boilers &c., also Stock of Plants at the Nurseries, Hertford Road, Lower Edmonton, by Protheroe & Morris, at 12.
FRIDAY—
Orchids by Protheroe & Morris, at 12.45.

The Progress of Horticulture.

The problems which confront the horticultural branch of the Board of Agriculture are numerous, intricate and difficult. They are rendered the more difficult owing to the fact that they have to be considered side by side and in relation with the problems appertaining to the development of the larger industry of agriculture. To the uninitiated, horticulture may appear to be a mere annex or small branch of agriculture, and it is to be feared that to many people in positions of authority it connotes either the growing of plants in back-gardens or the cultivation of precious shrubs and flowers in the luxurious conditions of wealthy establishments.

The first essential is therefore that the Board of Agriculture should realise that horticulture is an industry of independent rank and of first importance; that it is destined to take yet higher rank, and to vie in importance with and ultimately to surpass agriculture, and that therefore the interest of and problems appertaining to horticulture must not be so merged with those of the sister industry as to lose their proper individuality. A very brief consideration of the existing facts will suffice to show that the claims which are advanced on behalf of horticulture are not exaggerated. The horticultural histories of Holland, Belgium, Denmark and France prove that the cultivation of the future will be not agricultural but intensive cultivation—in other words that growers will tend more and more to discard their old methods and to adopt those of horticulture.

The perfection of these methods has been brought about by growers working on horticultural lines. Therefore, if the interests of horticulture are confided exclusively or mainly to men whose training has been purely agricultural the art of intensive cultivation will most assuredly make but little official progress in this country.

These considerations lead at once to the conclusion that attached to each farm institute established in the counties there should be a horticultural department as an independent unit. If the amount of money be not sufficient for this to be done at the outset, counties in different parts of the country should be selected, and instead of, or side by side with, farm institutes, horticultural institutes should be established. To select suitable counties for such institutes would not be difficult, for many of them are honourably distinguished already on account of the excellence of the work done by their several horticultural instructors. Working often with few facilities, and with miserably inadequate funds, these men have done good pioneer work and could be relied on to give an excellent account of themselves if provided with a larger scope and opportunity.

Passing to other aspects of the work of the Horticultural Branch, we may infer that the large and important question of fungous and insect pests and the cognate question of a phyto-pathological State service of inspection and certification will be referred to the horticultural sub-department. The recent appointment of an entomologist and the announcement of the early appointment of additional assistant inspectors may be taken to indicate that this part of the functions of the horticultural branch will be prosecuted with thoroughness and vigour. There are indications also—which will be welcomed very warmly by the friends of horticulture—that the yet more important questions of cultivation are to engage the attention of experts on the staff of the Board. As we write, the selection of a chief inspector is under consideration. We take it that the first and main function of this officer will be the difficult and important one of making a horticultural survey of this country. Such a task—the purpose of which is excellent—will soon prove itself to be beyond the scope of any single individual, however gifted he may be, and doubtless, in course of time, he will be provided with adequate assistance wherewith to carry out the survey.

The problems connected with the cultivation of fruit will be dealt with in three institutions. Two of these fruit stations—one in the west and one in the south-eastern counties—are in course of formation. The third, which we believe will be in the eastern counties, is not yet established. We think that the north has a claim on the third station, and we should recommend the North of England Horticultural Society to bestir itself betimes. There is an undue concentration of funds for agriculture and forestry in the Universities of Cambridge and Oxford, and, much as we respect these ancient seats of learning, we hope that the policy of concentration will not be pursued further.

To return to the duties of the chief Horticultural Inspector. The function of this officer is no doubt chiefly that of an observer and recorder. Where crops fail, he will be required to ascertain whether cultivation is at fault. It will not be his function to bother about fungous pests, but to learn rather how plants of a given kind may be grown in spite of these enemies which prey upon all products of imperfect cultivation. Kew will serve, as we understand the proposals, as the clearing house for fungous and insect pests, and thither will be sent the specimens suspected of harbouring parasites inimical to cultivated plants.

Following after the survey must come, and, as soon as possible, an inquiry into the economic state and possibilities of small and intensive cultivation. Not selfishness but patriotism makes us deplore the success which waits upon the efforts of Canada and Australia to attract our young men overseas. We have a suspicion that this country might serve equally well for the settlement of many of the youths who now emigrate, and if the horticultural branch could prove that our suspicion is well-founded it would do the nation a service of the greatest magnitude. Lastly, although we look with grateful and friendly eyes on the advances which the horticultural branch of the Board is making we do not disguise from ourselves that the horticultural edifice must remain quite incomplete and must forego its full measure of usefulness until there be established at least one College of Horticulture which shall stand to this applied science as a university stands to pure science. To farm out horticultural problems to this or that specialist institute is all very well; but horticulture needs and deserves more than this, namely, a College of Horticulture where each and every problem of purely horticultural import may be investigated, and in which the highest training in the various branches of horticulture may be given. It must be a college in which teaching and research go hand in hand, and one which young men destined for horticultural careers will attend, not for the purpose of learning snippets of science, but with the object of becoming good scientific growers.

ROYAL HORTICULTURAL SOCIETY.—The next meeting of the Committees will be held on Tuesday next, February 4, in the Vincent Square Hall, Westminster. At the 3 o'clock meeting of the Fellows Mr. C. F. BALL will deliver a lecture on "Plant Hunting in Bulgaria."

TESTIMONIAL TO THE REV. W. WILKS, M.A.—The fact that Mr. WILKS will shortly complete his 25th year of service as secretary of the Royal Horticultural Society was mentioned in these columns a fortnight ago. We now publish a communication issued by the Council explaining a movement that is on foot for marking the event in a satisfactory manner: "On February 11, as stated in the Society's annual report for 1912, the Rev. W. WILKS, M.A., V.M.H., will have served 25 years as secretary of the R.H.S., and it is thought by many of those closely associated with him in the Society that the occasion should not be allowed to pass without some recognition of the valuable service he has rendered during this long period. The hold that the Royal Horticultural Society has established on public confidence has led to a success which may well be described as phenomenal. This has been, in part at least, due to the labours of Mr. WILKS, and the Council have always felt that they might rely upon his tact, judgment, and resource to help them to meet the difficulties they have had to contend with from time to time. The result has been that a large body of Fellows feel anxious to take advantage of this opportunity to mark their appreciation of the services rendered to the Society by Mr. WILKS during a quarter of a century. This should take, they suggest, the shape of a testimonial, subscriptions to which are not to exceed £1 1s. If you are willing to support the proposal, be so kind as to send your subscriptions to the Manager, London County and Westminster Bank, Victoria Branch, Victoria Street, Westminster, S.W., with the form and in the envelope enclosed. Cheques and Postal Orders should be crossed 'Wilks Testimonial.' Mr. W. A. BILNEY, a member of the Council, has kindly undertaken the duties of hon. secretary, and all communications (except subscriptions) should be addressed to him at Temple Chambers, Temple Avenue, London, E.C." The invitation is signed by Sir TREVOR LAWRENCE, president, and about 50 Fellows.

HORTICULTURAL CLUB.—The Rev. W. WILKS, M.A., will be a special guest of the Horticultural Club at the annual dinner on Tuesday next.

ENGLISH ORANGES.—If it were not for the exhibits of English Oranges contributed every year by Messrs. RIVERS & SON, horticulturists might imagine that Orange fruit culture has ceased to be practised in English hothouses. It is a fact that most of the old orangeries have fallen into disuse, or are employed for some other purpose than that for which they were built, but it can at least be said that Messrs. RIVERS still make Orange fruit culture one of their specialities, and a number of English gardens likewise preserve this feature. Those who attend the annual dinner of the Horticultural Club on Tuesday next, will have opportunities of testing the flavour and sweetness of home-grown fruits for themselves, as we believe a gift from Messrs. RIVERS' houses will form part of the dessert on that occasion. Those who have no knowledge of the free-cropping qualities that Oranges exhibit when forced in suitable conditions may be recommended to visit Sawbridgeworth when the trees are in fruit. Messrs. RIVERS have a house, 60 feet long and 12 feet wide, containing 18 trained trees. The temperature in this house does not fall below 50°, and the fruits ripen from December to March. The yield from this house this season exceeded 1300 fruits. Ocean transit is now so easy and cheap that we import abundant supplies of Oranges all the year round, even in winter when most of the fruits are so inferior that one wonders how they can find appreciation, but in January, at any rate, it may possibly be found that the home-grown Orange is scarcely equalled in the English market.

THE FLOWERING OF THE ALMOND.—The extraordinary precocity of the present season is shown by the flowering of the common Almond, which is always a fairly satisfactory index. The first flowers on a tree, situated in a favourable position in Wandsworth, five miles south-west of London, expanded fully on Saturday last, the 25th ult., being the first time in the past 11 years that any flowers have expanded in January. Previous dates for the flowering of this tree are: February 24, last year; March 11, 1911; March 12, 1910; April 1, 1909; March 23, 1908; March 20, 1907; February 28, 1906; March 7, 1905; and March 21, 1904.

CHRYSANTHEMUM QUEEN MARY.—Blooms of this beautiful white Japanese variety were sent recently by Messrs. R. F. FELTON & SONS to Queen MARY, whose appreciation of the gift is described in the following letter:—"The Lady in Waiting is commanded by the QUEEN to thank Messrs. FELTON, and ask them to kindly convey to Mr. WELLS, of Merstham, HER MAJESTY'S most grateful thanks for so kindly sending her the beautiful basket of Chrysanthemum blooms, which the QUEEN admires immensely, and greatly appreciates the kind thought."

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.—Mr. LEOPOLD DE ROTHSCHILD will preside at the 74th anniversary festival dinner on June 25 next in aid of the funds of the Gardeners' Royal Benevolent Institution, of which he is a vice-president.

NATIONAL CHRYSANTHEMUM SOCIETY.—The annual general meeting of the members of the National Chrysanthemum Society will take place at Essex Hall, Essex Street, Strand, on Monday next, the 3rd inst., at 7 p.m.

THE GHENT SHOW.—The list of English Jurors for the Ghent Show in April next, published in our last issue, should have included the name of Mr. WILLIAM CUTBUSH.

THE BEE AND THE CINEMATOGRAPH.—Recently at the London Opera House, Kingsway, an unusual feature was provided by a film illustrating the life and habits of the honey bee. Mr. J. C. BEE MASON, the expert who explained the details of the film, stated that he spent six weeks of close observation to obtain the picture showing a queen bee emerging from the cell. The stages from the hatching of the eggs until the breaking away of the perfect insects from the cells, after a kind of wriggling process, were all shown clearly and naturally, as were the gathering of nectar, storing of honey, and other details.

PROGRESSIVE DENMARK.—The following extract, which is the more interesting in that it reaches us from the other end of the earth, the Philippine Islands (*Agricultural Review*, December, 1912), is deserving of wide publicity: "In no other country in the world does the Government lend aid to its farmers as does Denmark. . . . A labourer who has worked on a farm for five years, and who has a character so good that two reputable farmers will certify to it, may obtain from one of the banks controlled by the Government a loan wherewith to purchase a farm of from 4 to 10½ acres. The amount loaned by the bank covers probably nine-tenths of the value of the farm."

"THE BOTANICAL MAGAZINE."—The issue for January contains illustrations and descriptions of the following plants:—

SENECIO STENOCEPHALUS, tab. 8472.—This species belongs to the section Ligularia, and is a native of Japan and Northern China. Specimens were collected by Mr. E. H. WILSON in one of his earlier expeditions, but the plant which provided the material for the *Botanical Magazine* plate was collected in Northern China by Mr. PURDOM, also on behalf of Messrs. JAMES VEITCH & SONS. MAXIMOWICZ in describing the plant, speaks of the presence of only one ray-flower in each head, and Mr. W. BOTTING HEMSLEY, in a note in *Gardeners' Chronicle*, September 16, 1905, p. 213, refers to this peculiarity, which, however, is apparently not constant, for those shown in the *Botanical Magazine* figure have from four to five ray-florets, and Mr. HUTCHINSON in the accompanying text states that they number from one to five. The plant is a very strong-growing subject, and, like others of the genus recently introduced from China, it is suitable for planting on the banks of streams or in the wild garden, where bold effects are desired.

ROSA SERTATA, tab. 8473.—We are also indebted to Messrs. VEITCH for the introduction of this new Rose. It was found by Mr. WILSON whilst plant-collecting in China for that firm, and the Kew plant was raised from seeds sent home by him. The species is closely allied to R. Willmottiæ, but it is much larger in all its parts. R. sertata develops long, slender shoots, which arch gracefully, and produce, in mid-June, a profusion of rose or rosy-purple flowers. The fruits also are richly coloured, whilst the foliage is finely cut and of a very dainty appearance.

CLERODENDRON BAKERI, tab. 8474.—The Clerodendrons are favourite indoor plants, and C. Bakeri promises to be a useful addition, as it is stated to be a very decorative plant when well grown. Being a native of West Tropical Africa, it needs a stove treatment. Specimens at Kew, grown in a tropical stove, flowered in March. The inflorescence is a many-flowered cyme, of long, tubular, white flowers.

AMORPHOPHALLUS CORRUGATUS, tab. 8475.—This species was discovered by Dr. A. F. G. KERR in Siam, at 5,000 feet altitude. Both the spathe and the spadix are very ornamental: the former is hooded, green on the outside, mottled with white at the base, and has purplish margins. The appendix is corrugated, and the ovaries a purple colour, these being determining characters.

ASTER PURDOMII, tab. 8476.—The Asters provide many excellent garden plants, and, judging by the picture of this new Chinese species, it should prove a desirable acquisition. The flowers and flower-stalks are a pale-violet colour. The capitulum is about 2½ inches across, and the flower-stalks about 6 inches long. The species was collected by Mr. PURDOM in Shensi, North China. The plant is perfectly hardy, and makes an excellent subject for the rock-garden.

NESTING-BOX EXHIBITION.—Nesting boxes, which the Selborne Society's Bird Sanctuary's experience has shown to be an improvement on the usual Continental type, have found considerable favour with English bird-lovers, and an exhibition has been arranged by the Brent Valley Bird Sanctuary Committee, from to-day (February 1) to the 15th, at which the tried forms and new designs may be seen, as well as other apparatus connected with the attracting of birds. It will be held in the offices of the Selborne Society at 42, Bloomsbury Square, London.

THE RAINFALL OF 1912.—The records of the rainfall in 1912, contributed by correspondents in various parts of the country, will be read with more than usual interest. At Hill House Gardens, Harrow Weald, Middlesex, the total rainfall for the year amounted to 28.83 inches, which is 3.40 inches above the average for the past 20 years. On 220 days a measurable quantity of rain was recorded. April was the driest month, when there was only .07 inch. In August, rain fell on 26 days, the total amount for the month being 5.52 inches. At Rosemundy Gardens, St. Agnes, Cornwall, rain fell on 225 days, the total rainfall being 41.90 inches. The four wettest months were March (5.05 inches), June (4.82 inches), August (7.46 inches), and December (6.14 inches). Mr FRANKISH states that at Waltham Hall Gardens, near Grimsby, the year's rainfall was 32.67 inches, compared with 25.41 inches in 1911. June and August were the wettest months, when 4.59 inches and 4.24 inches fell respectively. On August 26, 1.36 inch was recorded. April was the driest month, when only 0.48 inch fell. Mr. WILMOT YATES, Rotherfield Park Gardens, Alton, states that the rainfall was by far the heaviest recorded for many years past, and amounted to 49.88 inches. On September 29, 2.20 inches fell. August, with 8.29 inches, was the wettest month, whilst March, with 5.79 inches, June (5.34 inches), and December (6.29 inches), were also unusually wet. Rain fell on 203 days. Records compiled by Mr. E. MATTHEWS, at Ardtornish Gardens, Morvern, Argyle, show that rain fell on 252 days, as compared with 240 days in 1911. The total rainfall for the year measured 83.63 inches, which is in excess of 1911 by 3.11 inches, and of the average for the past three years by 8.86 inches. May was the driest month, with 2.98 inches, and December the wettest, with 14.83 inches. There were 15 days each with a fall exceeding 1 inch, and on one of these, September 3, there was a fall of 2.27 inches, of which 1.70 inch fell in five hours. The most prolonged drought lasted 18 days, from September 16 to October 2 inclusive. Mr. W. R. ROBERTS, who forwards the records taken at Bailrigg Gardens, near Lancaster, states that 3.68 inches more rain was recorded than in 1911, and there were 39 more wet days. The total rainfall for the year was 45.63 inches, and this quantity fell on 229 days. At Davenham Gardens, Malvern, rain fell on 209 days. The greatest fall in the 24 hours was on January 17, when 1.10 inch was recorded. August was the wettest month, with a fall of 8.73 inches, and April the driest, with only 0.13 inch. The total rainfall for the year amounted to 37.79 inches, compared with 21.23 inches in 1911. Mr. G. BENTLEY, Shugborough Gardens, Stafford, gives the total rainfall in those gardens as 36.74 inches. August was the wettest month, when 6.46 inches fell. On each of 243 days 0.1 inch or more was recorded. The rainfall at Dyrham Park Gardens, Barnet, exceeded that of 1911 by 5.60 inches. The heaviest rainfall occurred during a thunderstorm on the afternoon of July 23, when 2.81 inches fell in about 130 minutes, or from 1.15 p.m. to 3.27 p.m. February 3 was the coldest day, when 24° of frost were registered. Records compiled by Mr. JAMES B. ALLAN, Osberton Gardens, Worksop, show that the hottest day was July 12, when the thermometer registered 89° in the shade, and the coldest day January 3, when there was 25° of frost. The heaviest rainfall occurred on August 26, when 1.17 inch of rain was recorded. April was the driest month, with only two rainy days and a fall of 0.16 of an inch. In August the rainfall amounted to 5.26 inches. There were 192 rainy days, and the total rainfall for the year amounted to 32.61 inches, or 13.24 inches more than in 1911. The year's rainfall at Greenhill Gardens, Warminster, amounted to 40.96 inches. Rain fell on 184 days; the heaviest fall in 24 hours was on September 29, when 1.10 inch was recorded. April was the driest month, with only 0.09 inch, which fell on two days, the 8th and 9th. The four wettest months were August (5.83 inches), March (5.72 inches), June (5.35 inches), and December (5.35 inches). Mr. S. R. CROFTS, Borough Meteorologist, Bridlington, sends the following details. Rain fell on 211 days, the total amount being 31.21 inches, an increase over 1911 of 4.77 inches. There was less sunshine by more than 413 hours. The greatest rainfall was on May 22, when 1.60 inch was recorded. The average rainfall for the past five years at Bridlington is 27.81 inches. At Lowther Castle Gardens, Westmorland, the year's rainfall amounted to 35.46 inches. Rain fell on 215 days. December was the wettest month, with 4.54 inches, but August was almost as wet, the record for that month being 4.53 inches. There were 27 rainy days in December. Mr. W. A. COOK sends the following particulars from Leonardslee Gardens, Horsham, Sussex. The total rainfall was 37.83 inches, and the number of rainy days 192. In August, 7.91 inches were recorded. The wettest day was September 29, when 1.87 inch fell. More than 1 inch of rain also fell on October 28. April was unusually dry, the rainfall totalling only .8 inch.

INHERITANCE IN APPLES.—The study of inheritance in our cultivated plants has made, during the last 15 years, a remarkable advance, but, very naturally, this has been principally in annual plants. The fruits which are generally grown in this country take many years to reach fruiting age, and results from them are, therefore, slower. For this reason, special interest will be aroused by the recently-published *Bulletin** of the New York Experiment Station by Professors HEDRICK and WELLINGTON, in which the results of crosses of Apples made in 1898 and 1899 are discussed. Our knowledge of descent in the Apple has, so far, been based entirely upon the knowledge of cases where but a few seeds have been raised from one cross, and it is unnecessary nowadays to emphasise the necessity for large numbers before any worthy deductions can be drawn. It is in this respect that the paper under consideration marks an advance. A considerable number of certain crosses were made, and these should give pause to those who think that in such cases a certain number of "reversions" to a crab-like fruit will be found. In the whole series no crab-like fruit appeared. The case of the cross Esopus × Ben Davis may be taken as typical. Of this, 29 seedlings have fruited; two of this number resembled Esopus in all characters and two equally reproduced the other parent, Ben Davis. The rest were an admixture of the characters of the two parents in varying combinations. Though some fruits are markedly smaller than either parent, no fruit could be called "Crab-like" in the more elastic use of the term. The discussion of Mendelian inheritance is, of course, but of little value till a second generation is raised, but one lesson can be learned, and that a very valuable one, and it is that a large number of any one cross will probably give the desired admixture of characters. The self-sterility of most Apples is now well known, and it is interesting to note that in two varieties —Hubbardston and Baldwin—where some self-fertilised seed was procured, the plants were of unusual weakness of growth, and in the case of the latter fruit a very large number perished in the seed-bed from fungous attacks, &c. We are glad to note that the authors deal a blow at the idea, so sedulously propagated by some American nurserymen, of pedigree cultures of certain varieties of fruits, the argument being that if a specially fruitful and vigorous branch appear on a tree, stock raised from it will show such characters in perpetuity. The authors consider all such differences to be the result of environment only. Enough has been said, we trust, to show the important character of the paper under consideration. The further development of this work will be awaited with interest.

* New York Agricultural Experiment Station. Geneva. *Bulletin* 350; June, 1912.

A BACTERIAL DISEASE OF PISUM SATIVUM.—A short preliminary note on a new bacterial disease of the culinary Pea (Pisum Sativum) was read at the meeting of the Royal Society on January 23 by Miss D. M. CAYLEY. The fact that the disease is transmitted in the tissues of the cotyledons of the Pea shed is of interest. From the cotyledons the organism spreads into the young growing plant and into the soil. The disease is likely to prove a formidable one from an economic point of view. The organism causing the disease is a large, rod-shaped bacillus, which has been formed in large numbers in the intercellular spaces and cells of the cotyledons. It has also been found distributed more or less throughout the whole plant—in the young radicle, the collar, the phloem cambium medullary rays, and occasionally in the pith of the stem, in the parenchyma of the vascular bundles of the pod, in the loose cells on the inner surface of the pod, and in the funicle. It was suggested that the organism gained access to the cotyledon through the micropyle. The general symptoms resemble those of the formidable "Streak" disease of Sweet Pea (Lathyrus odoratus). Streaks appear at the base of the petioles. These streaks dry out and split open. The stem becomes discoloured and rather water-soaked in appearance, the plants look generally unhealthy, and the yield is considerably reduced. In bad cases the collar may be very much disorganised, and the plant dies. The percentage of germination of the seed is also reduced. From various reports received by Prof. BATESON, the disease seems to be widely spread. It has caused considerable damage in the experimental plots at the John Innes Horticultural Institution at Merton for the last two years. A similar organism to the one above described has been observed in, and isolated from, the stem of King Edward VII Sweet Pea, which was suffering from a bad attack of "Streak," and, in view of these observations, the author has considerable doubts as to whether Sweet Pea Streak Disease is, as it is commonly held to be, due to Thielavia basicola. Further investigations are in progress.

HERBAGE STUDIES: HYDROGEN CYANIDE IN PLANTS.—Professor ARMSTRONG, Dr. E. F. ARMSTRONG and Mr. HORTON have communicated to the Royal Society an interesting and valuable paper on the occurrence of hydrogen cyanide in fodder plants. The communication, which is a continuation of their previous studies, shows that the variety of Lotus corniculatus, previously held to be free from cyanide, contained, in fact, a minute trace of this substance. They have shown also that White Clover—like Lotus corniculatus—is a cyanophoric plant—that is, one which contains hydrogen cyanide, and they prove that, whereas the wild form is always possessed of a certain amount of cyanide, the cultivated form is destitute of that substance. The authors cited have, moreover, continued their studies of herbage plants in other directions, and are inclined to believe that the biochemical variations which occur in herbage plants are responsible for the very different values for fattening purposes that different pastures are known to possess. They hope in the coming summer to put this interesting hypothesis to the test of experiment.

THE PROGRESS OF HUSBANDRY.—In his note on this subject (*Gardeners' Chronicle*, January 4, p. 14) *R. P. B.* falls into an error in assuming that Mr. MIDDLETON omitted, from his presidential address to the Agricultural Section of the British Association, reference to the work of MACKINTOSH of Borlum. The error is traceable to the fact that, although our report of Mr. MIDDLETON's address was a fairly full one it was, by the nature of the case, by no means complete, and among the portions which were omitted was the reference to Brigadier-General MACKINTOSH, the reputed author of *An Essay on Ways and Means for Inclosing, Fallowing, Planting, &c., Scotland, and that in Sixteen Years at farthest, by a Lover of his Country.* Mr. MIDDLETON's reference to this work and its reputed author is so sympathetic and complete that we give it in full, at the same time taking the opportunity of recommending all those of our readers who are interested in the history of husbandry to obtain and peruse the reprint of the address issued by the British Association, Burlington House, London, W. "Of all old books on agriculture this is, to me, the most interesting. The anonymous writer is believed to have been Brigadier-General MACKINTOSH of Borlum, one of the Rebel Leaders of 1715, who fell into the hands of the English at Preston, was imprisoned in Newgate, and sentenced to death. But this Highlander was not to be held by English gaolers. With some of his comrades he overpowered the prison guard and made good his escape. The Essay was written, its author informs us, in 'my Hermitage'—supposed to have been a cell in Edinburgh Castle—and the writer remarks that he can give no better reason for his work '*than other* Enthusiasts *do, the Spirit* moves me.' Assuming 'A Lover of his Country' to have indeed been MACKINTOSH of Borlum, the prisoner employed his enforced leisure to great advantage. He displays more familiarity with the classical authors than any of his predecessors, or for that matter than any of his successors, except HARTE and ADAM DICKSON, and he had obviously studied all the more important works published in England in the previous century. He argues that since the Union, Scotland had not made progress, and that, while extravagance had spread and necessaries greatly increased in cost, no attempt had been made to learn good rural economy from the English. He points out that until they improve their estates Scottish lairds cannot hope to emulate English landowners. He counsels fallowing and inclosing, and recommends that skilled English labourers should be brought to teach English methods. He indicates where the best workmen might be obtained. Men from Devonshire for denshiring (paring and burning); men from Cambridgeshire for draining; men from Hertfordshire for ploughing; from Hereford for fruit planting; and from Shropshire for hedging. He estimates that six hundred and forty men would be required for Scotland. A 'regimental number,' he facetiously remarks, but a welcome regiment, for they would be armed only with spade and shovel! He would apportion a group of these men to every county in Scotland and place them under the guidance of County Supervisers. 'And if I might have my wish,' he says, 'we should not go on by Halfs, and all *Europe* should be quickly disabused of the Reproach they load us with of *Idleness* and *Poverty*.' In another passage he prophesies that '*Scotland* from one of the poorest, ugliest, and most barren Countries of *Europe*, is, in a very few Years, become one of the richest, most beautiful and fertile Nations of it,' and who would now assert that the old rebel's prophecy has not been fulfilled? Other objects requiring the attention of the Scottish Improver of 1729 were Land Tenure and Education. Our author urges upon landowners the folly of a system of tenure which demands services from their tenants, and which affords the occupiers no incentive to improve their farms, and he advocates leases not only in the interests of the lairds themselves but in justice to the farmers. MACKINTOSH was an enthusiastic educational reformer; he animadverts on the unsuitable instruction offered in rural schools and explains how easily it might be improved. Their Scottish schoolmasters knew Latin; why should they not translate passages from VARRO, COLUMELLA, and other writers which boys might read? For the use of Charity Schools in remote parts the 'learned Mr. *Ruddiman*' should be employed 'to translate and compendize' the works of CATO, PALLADIUS, and others. Why, he asks, should not one day a week be set aside for the discussion of agricultural subjects, so that country boys might 'dispute on points of Husbandry or breeding or fattening Cattle'? And why should those advanced pupils, who read Greek and Latin authors, have unsuitable text-books placed in their hands? Might not the chaste HESIOD and the useful VARRO supplant such works as those of SAPPHO and OVID? And why send so many dunces to the university? Let able lads go there by all means, but for the sake of fashion why spend the family income on educating one son at college and neglecting the others? From the school 'A Lover of his Country' turns to the kirk. Much might be done if ministers fallowed or enclosed their glebes, and used their pulpits to enforce lessons of thrift and honest dealing. Then, like BLITH, he appeals to the universities. 'And certainly,' he says, 'the learned Masters of our Universities are too well acquainted with the Ancients not to know that Agriculture was the first Care of all Legislatures'; and he continues: 'Natural Philosophy was acquired and attained to by those that laboured the Ground and sowed Seeds, saw their different Ways of Propagation, planted and transplanted Trees, Herbs, Roots, found what ground produced this best, what that, and left their well demonstrated experiments to their sons and posterity; they were the very first Philosophers. . . To be sure Natural Philosophy was the first, and the sagacious Husbandman the first Philosopher; as the wandering Star-gazing Shepherd or Herdsman was the first Astronomer.'"



FIG. 37.—BEGONIA "JULIUS": COLOUR OF FLOWERS, ROSE-PINK.

HAND-LIST OF BRITISH LICHENS.—Students of the Lichens will be glad to have a list of the plants of this group which occur in the British Isles. Such a list has been compiled by Mr. A. R. HORWOOD on behalf of the Lichen Exchange Club, and may be obtained, post free, 1s. 1d., from Messrs. DULAN & Co., 37, Soho Square, London. In general respects the list follows the nomenclature and order adopted in the British Museum monograph of the group.

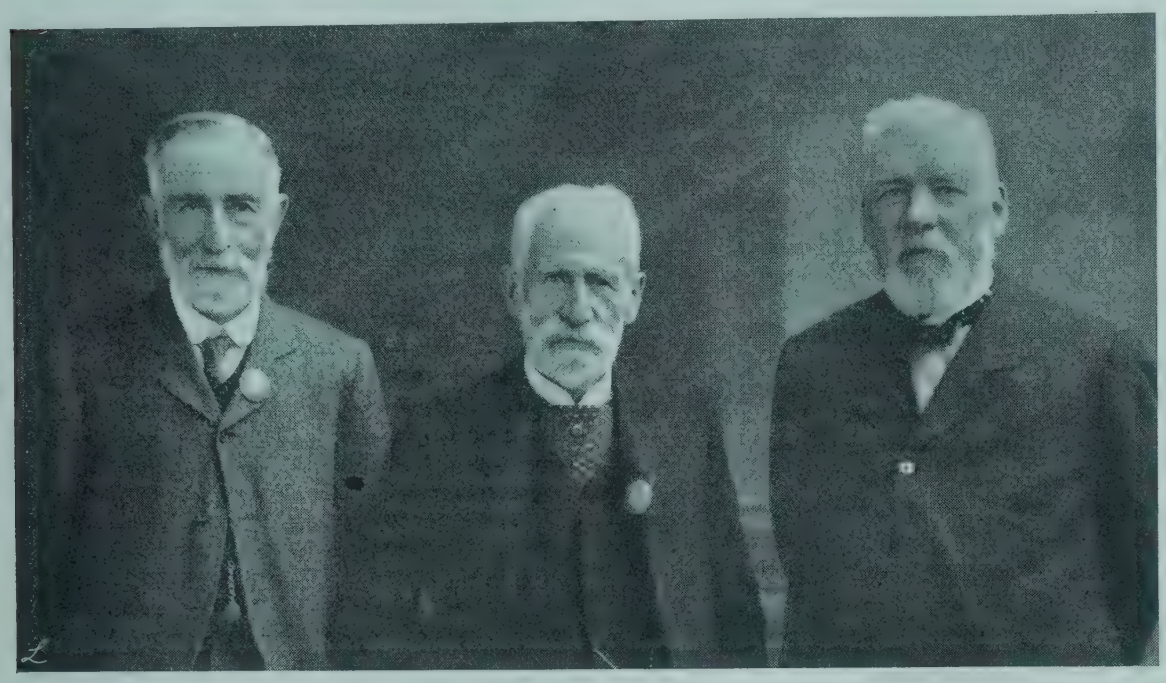
A GARDENER'S LONG SERVICE.—Mr. WILLIAM CHUCK, gardener at Brodsworth Hall, Doncaster, is retiring after 42 years service. During his long stay at Brodsworth, Mr. CHUCK has been gardener to four members of the THELLUSSON family.

BEGONIA "JULIUS" AS A BASKET PLANT.

THIS late autumn and winter-flowering Begonia, raised by Messrs. James Veitch & Sons, Ltd., a few years ago as the result of fertilising a semi-double, white summer-flowering tuberous variety with the pollen of B. socotrana, is very valuable for baskets during the winter months. The plant is robust and free growing, and furnished with socotrana-like foliage. The flowers are produced in clusters of five to seven, which are raised well above the foliage. They are from 2 to 2½ inches in diameter, double, and of a pleasing delicate shade of rose-pink. The variety received an Award of Merit from the Royal Horticultural Society in 1911. Our illustration is reproduced from a photograph taken at Messrs. Veitch's Nursery on December 17 last. The plant was grown from a cutting taken in the previous August

THREE FAMOUS GARDENERS.

IN the accompanying illustration we present a group of three gardeners whose proud boast it is that they served as young men at Heckfield Hall, Hampshire, at that time the residence of Viscount Eversley, one of the leading patrons of gardening. Messrs. Tillyard and Wildsmith, who in turn directed the operations in the Heckfield gardens, were amongst the most strict disciplinarians of the day, and represented a type which for good or for ill has almost passed away. It may be held by some that many of the gardeners of half a century ago were often unnecessarily severe and insistent upon the observance of nice points relating to temperature, shading and watering. Their anxiety to maintain the plant and fruit houses at a given temperature, no matter what conditions prevailed out-of-doors, may not appear justifiable in the present state of our knowledge, but in the old days of longer hours of work and lower wages, even, than now prevail, the insistence upon such details was often considered inseparable from first-class cultivation. In other respects the effects of strict discipline were by no means unsatisfactory. Weak men were crushed by the rigid, unyielding rules, but many of the strong who passed safely through the ordeal exhibited afterwards qualities that go to make the best men. The members of the small group in our illustration are amongst the best known, the most skilful, and most highly respected of British gardeners, and from information in our possession we know that in each case Messrs. Crump, Goodacre and Speed attribute such qualities as they possess to the hard training they received, and, like all veterans, are apt to regret that the conditions of life to-day do not admit of the younger men in the gardening world obtaining the advantages of a similar regime. They have served their employers for periods of 30, 38, and 49 years respectively, and each has received from the Royal Horticultural Society the Award of the Victoria Medal of Honour.



WILLIAM CRUMP. WALTER SPEED. J. H. GOODACRE.

Mr. WALTER SPEED, of Penrhyn Castle Gardens, North Wales, is one of our best Grape-growers, and his skill shows itself not in raising short-lived vines and cultivating them by market-garden methods, and so impoverishing them by excessive cropping that they have to be renewed in the course of a few years, but in quite the opposite direction. The vines which Mr. Speed found growing in several of the vineries at Penrhyn Castle 49 years ago are still flourishing and bear every year full crops of Grapes of first-rate quality and perfect finish, such as would delight the public if it were the practice of Mr. Speed to compete at the exhibitions. This longevity and fruitfulness have been brought about by occasional lifting of the roots and renovation of borders, aided by the most careful pruning. Mr. Speed is no less successful in the culture of hardy fruits, as a visit in August last would have convinced anyone. Natural flower-gardening is one of the delightful features of Penhryn, and amongst the many exotic and tender plants which Mr. Speed has planted with consummate taste in the flower garden and pleasure grounds, he can point to extraordinary fine specimens, and call to mind the conditions which attended the planting operations. The new Bamboo garden, which he has designed and planted, is already a great success. Indeed, we can recommend Penrhyn Castle Gardens to our readers as amongst the finest and most interesting in the whole of Great Britain.

Mr. J. H. GOODACRE is, in the opinion of most gardeners, the champion fruit-grower and exhibitor. During the past 35 or 40 years he has taken more prizes at first-class exhibitions than have been won by any other man within memory or record. Our own columns have testified, indeed are always testifying, to the successes achieved by Mr. Goodacre, who has directed the Earl of Harrington's garden at Elvaston Castle for so long a period. His son, the present gardener at Moulton Paddocks, is now writing one of our weekly calendars, and bids fair to attain success as remarkable as that which his father has achieved.

Mr. WILLIAM CRUMP is likewise best known as a fruit-grower, his name being associated with the well-known Melon Blenheim Orange, and the new dessert Apple W. Crump. During the time Mr. Crump was at Blenheim Palace a great deal of successful exhibiting was done, and amongst honours won were the prizes offered by the Worshipful Company of Fruiterers and Messrs. Webber, of Covent Garden. For the past 35 years he has controlled Lord Beauchamp's gardens at Madresfield Court, and has been largely engaged in the raising of hardy fruits and other trees for estate planting and for forming permanent orchards in a co-operative scheme existing between the landowner and his tenants.

It would be interesting to learn how many of the gardeners of this country holding positions in royal and other first-class establishments have received part of their training under one or other of these veterans. Take Mr. Speed, for instance. Great indeed must be the number of men who have come under his genial influence during the 49 years he has been engaged in gardening in North Wales.

HOME CORRESPONDENCE

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

CARNATION PROPAGATION (see pp. 7, 39, 59).—I quite agree in every detail as to the methods of propagating Carnations given by correspondents, but am of the same opinion as Mr. Coates that very few roots are formed within four weeks. I propagated a batch of Carnations by the method that is referred to, and up to the present time there is no sign of roots. They were inserted on January 6, making it three weeks to the present time. *George A. Aggett, Coombe Court Gardens, Surrey.*

———I agree with Mr. Coates's remarks in the last issue. But few varieties are sufficiently rooted to permit their removal from the propagating pit under four weeks. Lady Alington is one of the earliest to form roots from cuttings, and they are not developed in a shorter time than from 24 to 26 days here. Although the cuttings may root a day or two quicker in sand, it is my experience that when rooted in a suitable mixture of soil they form roots and grow much more rapidly after being potted into 60's than those rooted in sand. *A. Carvell, Hackwood Gardens, Basingstoke.*

———It is possible to have cuttings of Perpetual Carnations ready to pot off in 14 days after they are inserted. A batch of the variety Countess of Lathom was so treated here this season. More than once I have found cuttings rooted in 11 days. Get the right sort of cutting, and few plants will be found so easy to root as the Perpetual-flowering Carnation. Even leaves root freely, but, of course, they make no top growth. But "eyes" do; these are short pieces of stem with two leaves, and they root quite as freely as ordinary cuttings. The dominant bud in the axil of one of the leaves soon grows and forms a plant. *R. P. Brotherston, Tyninghame Gardens, Prestonkirk.*

———We grow a quantity of Tree Carnations. The cuttings are inserted in 3 inch pots, and placed in a propagating case, having a bottom heat of 70°. A few of the cuttings form roots in 14 days, but the majority are a much longer time before they are fit to be removed from the propagating case, and placed in a light house, where air can be admitted. *H. Millward, Foreman, Ingestre Gardens, Staffs.*

———It may interest Mr. Coates to know that Carnation cuttings may be rooted in so short a time as 10 or 11 days. This is my experience repeatedly. It is commonplace knowledge that the cuttings will root in 14 days. My earliest experience of rooting them in 10 days was about 18 years ago, the variety being Miss Joliffe. The cuttings were obtained from a friend, and as those of my own cultivating took quite a month before forming roots, I investigated the cause. The cuttings given me were superb examples, being clean, young and full of vitality. Their rooting in 10 days was as great a surprise to myself as to the friend who sent them, for, curiously enough, though an excellent cultivator, he could not root them much under 28 days. In the circumstances I wondered whether those cuttings had benefited by a change of air. The time was January, the districts concerned Norfolk and Middlesex. Since that experience I have frequently rooted cuttings in 11 days, the most recent instance being in September, 1912, when some 400 shoots were rooted and ready for potting in the time stated. Curiously, of some three dozen other cuttings of the same variety obtained from older plants that had been cultivated differently, inserted beside the larger batch at the same time, scarcely one rooted under two months. Here, then, was an interesting problem, though one not difficult of solution, since all the circumstances were within my own knowledge. The quick-rooting batch of cuttings came from young, unflowered plants, and were fresh as the proverbial Daisy. The tardy-rooting ones were from old plants twice flowered, then slightly cut back. Obviously, the unflowered stock plants are a great advantage in time-saving. There are other factors of almost equal importance. The growing of the stock plants in the same temperature as that in which the cuttings are destined to be propagated savours very much of orthodox methods. It is, however, a mistake. Cuttings grown in a lower temperature and in cool, well-aired houses

re to be preferred, and, if from unflowered lants, a thousand times so. Certain pro-agators of Carnations write glibly enough bout the size of the cutting, how to make it, the xact position on the old flowering stem such uttings should occupy, and other minor details, ut none of them say anything about the most mportant detail of all, the vitality of the cut-ing itself. In Carnation propagation there is othing of greater importance than this. *E. H. Jenkins, Middlesex.*

Lenten Roses.—Although, from their name, hese Hellebores might be expected to defer their lowering period until a later season of the year, hey are now in full bloom in sheltered gardens n South Devon, at a time when the later varie-ies of the Christmas Rose (Helleborus niger) are till in flower. The Christmas Rose, however, re-uses to hybridise with the Lenten Rose. Lenten Roses are less particular in their cultural require-ments than Christmas Roses, and in the late Mr. Archer-Hind's garden, in which a very varied and charming assortment of Lenten Roses flourished o perfection, Helleborus niger has entirely died ut, though often reintroduced and tended with he same care that the noted proprietor bestowed pon all his flowers. Shelter is indispensable for he Lenten Rose, as cutting, frost-laden winds oon play havoc with the foliage, which is far nore delicate than are the leathery leaves of Helleborus niger. This was exemplified during he severe weather that marked the opening nonths of 1895, when, in exposed sites, every leaf f the Lenten Roses was blackened by the frost, he flowers, which did not expand until the milder veather came, being entirely without foliage. Many of the named varieties of the Lenten Rose re lovely flowers, the petals of some being pure white, while in others they are delicately spotted with minute purple-red dots. There are attrac-ive Continental varieties, but better seedling forms have been raised by the late Mr. Archer-Hind, who has devoted many years to the hybri-disation of these plants. Much damage is often done to the plants when in flower by mice, these pests destroying the buds by hundreds, and wholesale trapping is the only remedy for them. When the flowers are required for indoor decoration, the bloom-stems should be split up into four sections to a height of an inch, and then immediately placed in water. If this be done, the blossoms retain their freshness for many days, whereas if the stalks are merely cut in the ordinary way, they are unable to absorb sufficient moisture, and the flowers quickly fade. *Wyndham Fitzherbert, Devon-shire.*

The Corsican Pine (see pp. 462, vol. lii, 28, 45, 59).—In the recent correspondence on this subject there is one point that I think has not been sufficiently emphasised, namely, the great importance of getting seed from hardy forms, local races, and individual trees of the species to be planted. I ven-ture to think that if planters made a rule to have trees raised from seed procured in the more northern habitats of the kinds used they would be able to revise their opinions of some of the trees which now have a bad name. While residing in British Columbia I noticed that the Douglas Fir grew in drier and more exposed positions than Thuya gigantea or Picea sitch-ensis, and also far less often died when the forest was thinned by lumbering. Perhaps it is southern seed that is responsible for the many bedraggled Douglas Firs we see in England. *H. E. S.*

Ripened Wood (see pp. 28, 60).—Mr. Small does not understand me, and he has also failed to convince me by his further remarks on the subject. Perhaps he has discovered the diffi-culty of demonstrating the value of one factor where several contribute to failure or success. He now, however, asks "Is not the 1911 crop sufficient evidence that ripe wood is of second-ary importance?" If Mr. Small gives it a second place my discussion with him is ended, for this is in strange contrast to "absolutely nothing" to which I at first objected. But to explain further, my contention is that 1910 was the most normal season in the past seven years as regards moisture and sunshine, and whether or not Mr. Small lays the stress on the former that I do on the latter element, both assisted to produce and mature good growth. While not contending anything for the future, these conditions give the best promise. I do not know exactly what is meant by a green and sappy state at this time of year; there is surely a correct medium between "too hard and ripe" and this state of things. It is well known that fruit-wood, even in a wet season, particularly of trees in the open, becomes well ripened. If this seems to be begging the question, it is nevertheless a fact. The wood here is in fine condition, partly due, perhaps, to the light nature of the soil and a gravelly sub-soil. Even Cherries and Currants on north walls complete and mature their growth with the aid of air and a certain amount of light only. Higher class fruit such as Apricots and Peaches would occupy many a north wall if they were known to succeed as well. It may interest Mr. Small to learn that nearly 200 trees here are thinned with saw and standard pruner only. To the question, why cut away the wood nature has provided, I would reply: if the unnatural operation of pruning trees in winter for considerations of space or ornament is carried out, amends have to be made in summer by the removal of un-natural growth caused thereby. I find, how-ever, these trees compare favourably with those saw-pruned of equal size, in cropping qualities. After all, variety, more than the question of pruning, governs the filling of the fruit room. *J. Lisney, Berwick House Gardens, Shrewsbury.*

LAW NOTES.

UNDEVELOPED LAND DUTY.

The decision of the referee, Mr. Howard Martin, P.P.S.I., in the case of Jackman & Son v. The Commissioners of Inland Revenue (see p. 46) has been issued. The proceedings were insti-tuted by Messrs. Jackman & Son against an as-sessment in regard to undeveloped land duty, charged in respect of certain nursery grounds situated at Woking, Surrey. The Commissioners only proposed to allow four acres as developed land, upon which had been erected sheds and greenhouses, out of a total of 180 acres. Mr. Howard Martin's award states that the area of land allowed as developed by the Commissioners is sufficient.

OVERHANGING TREES.

A resident at Streatham answered recently to an adjourned summons at the South-Western Police Court, at the instance of his next-door neighbour, for having damaged trees, two Syca-more and a Lime, growing in that gentleman's back garden.

Defendant confessed to cutting away the branches which extended into his garden.

Mr. de Grey: You sawed off the top of the Sycamore tree? It did not grow into your gar-den.

Defendant: Two pieces did.

Mr. de Grey said if the defendant wanted to clip the trees he should have confined his atten-tion to the branches extending into his garden. He had no right to go an inch over his neigh-bour's fence. He would have to pay 7s. 6d. damage and 7s. 6d. costs, 15s. in all.

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

January 21.—*Present:* Mr. E. A. Bowles, M.A. (in the Chair); Canon Fowler, Messrs. J. W. Odell, J. O'Brien, R. Hooper Pearson, A. Worsley, G. Wilson, A. W. Hill, G. Gordon, W. Hales, and F. J. Chittenden (hon. sec.).

Dendrobium fuscescens.—Mr. O'Brien showed a specimen of this curious species with brown flowers from the Himalayan region. It is figured in Griffiths's *Icon. Plant. Asiat.*, t. cccix, and belongs to the section included by Lindley in his genus Sarcopodium (see Lindley's *Folia Orchid-arum*), along with D. Cœlogyne, D. amplum, and D. rotundatum. Lindley considered the genus Sar-copodium intermediate between Dendrobium and Bulbophyllum, but later botanists have divided it, putting some of the species in Bulbophyllum and some in Dendrobium. It may be noted that the technical descriptions published of the species describe two orange spots on the column, but there are really three colours, one of them being quite low down.

Apples with many or no pips.—Mr. Chitten-den showed specimens of the Apples, to which he had previously referred, having more than two seeds in the carpellary cavities. The variety Duchess's Favourite had, as a rule, in the past season four seeds in each cell, and in one case five had been found. This is remarkable, as the num-ber in the wild types is practically constantly two, a fact which has been used as a basis for the separation of the genera Pyrus and Cydonia. Like many other points of distinction between species and even genera, this would appear not to be abso-lute. He also showed specimens of an Apple sent him by Mr. P. C. M. Veitch, of Exeter, called "No-Pip," which was reputed to form no seeds, although the Apple was perfectly developed. Those exhibited had only the merest rudiments of seeds.

Galls on Polypodium sp. from the Gold Coast.—Mr. W. H. Patterson sent specimens of the fronds of a Polypodium galled along the edges of the pinnæ, and somewhat crested through the attacks of a species of Eriophyes. Mites belong-ing to this genus are well known as exciting the development of galls on all sorts of plants, and one, E. pteridis, and another, unnamed, are de-scribed as causing galls on the margins of fronds of Pteris aquilina in South Europe. Mr. Pat-terson finds the mite to spread but slowly among Ferns at Aburi.

Early-flowering Ash.—Mr. E. E. Turner sent from Coggeshall an example of an early-flowering species of Ash which had been identified as Fraxi-nus angustifolia. It always flowers in January, and is conspicuous by reason of the bright colour-ing of the flowers. Dr. Henry believes this to be the very rare variety holotricha.

BRIGHTON, HOVE AND SUSSEX HORTICULTURAL.

January 16.—The annual meeting of the above society was held on this date. Mr. Thomas Billing occupied the chair. The annual report and balance sheet were adopted. The latter showed a deficit of £38 3s. 7d., which has been temporarily met by an advance from the bank. Mr. Balchin stated that the subscription list is greatly superior to that of last year, and the support re-ceived from the members themselves has been such that the committee look forward with con-fidence to the coming year. The Chrysanthe-mum show was a splendid one, but the reduction in the price of admission caused a loss of about £20. It had been suggested that the summer show should be dropped, but Mr. Balchin's opin-ion was that the society should support two exhibitions. Alderman Jeremiah Colman was appointed president; Mr. Billing, treasurer; Mr. Balchin, chairman; Mr. Frank Wollard, vice-chairman; and Mr. Gaston, secretary. As a mark of confidence of the members in the com-mittee, it was re-elected *en bloc.*

LIVERPOOL HORTICULTURAL.

The 34th annual meeting of this society was held recently in the Common Hall, Liverpool, Mr. W. Mercer in the chair. The annual re-port stated that the spring, summer and autumn shows of 1912 were all successful, each exhibition maintaining its high prestige for the excellence of the exhibits. The balance sheet shows a loss of £45 1s. 1d. on the year's working. The officers were elected. The Lord Mayor of Liver-pool was appointed president; Mr. Loo Thom-son, hon. treasurer; and Mr. Harold Sadler, secretary.

BRITISH GARDENERS' ASSOCIATION.

(EDINBURGH BRANCH.)

January 20.—A meeting of the Edinburgh branch of the B.G.A. was held on this date, when a paper was read by the branch president, Mr. W. H. Morland, of the Royal Botanic Gardens, on "The Gardener." Mr. Morland stated that all professionally-trained gardeners should support an association which consisted entirely of skilled horticulturists, and the British Gardeners' Asso-ciation is the only one society of that character at present existing in the British Isles. The next meeting will be held on the 17th inst., when a paper will be given by the secretary, Mr. James Harris, on "The Embellishment of a few of London's Public Parks and Gardens."

GARDENERS' ROYAL BENEVOLENT INSTITUTION.

(ANNUAL MEETING.)

The Results of the Election were recorded in our last issue.

JANUARY 23.—The 73rd annual general meeting of subscribers to this institution took place on the above date at Simpson's Restaurant, Strand. Sir Harry Jas. Veitch, chairman and treasurer, presided. The report of the committee and balance-sheet for 1912 were read by the secretary, Mr. G. J. Ingram. These were as follow:—

REPORT OF THE COMMITTEE.

The Committee have the pleasure to present their 73rd annual report, together with a statement of the several accounts (as audited) for 1912.

For 74 years the Institution has maintained the work for which it was founded, with increasing benefit year by year to those deserving applicants who have been eligible for its assistance in their necessity and distress. No less a sum than £142,000 has been disbursed in relief since its foundation, and in the last year a sum of £4,413 was expended in affording permanent assistance alone, being £67 more than in any other year in the history of the Institution.

At the beginning of 1912, 252 persons—men and widows—were in receipt of life annuities of £20 and £16 a year respectively. Of their number 22 have died during the year—12 men and 10 women. Four of the men left widows, whose circumstances and needs, being such as to render them eligible to succeed to the widow's allowance, were at once placed on the funds in succession to their late husbands, and without election, under Rule 3, 13. Thus, at the close of the year there were 234 annuitants on the funds. And to this number it is proposed to add by election this day 20 candidates from an approved list of 67 applicants, which will increase the list of beneficiaries to 254, being the largest number there will ever have been on the funds of the Institution. This further liability necessarily entails some anxiety, especially at a time when the charitable public are met with additional claims on their benevolence, but the Committee feel their subscribers will justify this liberal action and not let the Institution suffer in any way for want of funds to maintain this truly genuine work.

It is gratifying to the Committee to be able to again report that the Victorian Era Fund and the Good Samarian Fund have rendered invaluable services in helping applicants in distressed and necessitous circumstances.

The Victorian Era Fund assists those who have themselves been subscribers to the Institution and who are anxiously awaiting election; the Good Samaritan Fund grants assistance, as far as its means allow, to all applicants (horticulturists or their widows) who need its aid and whose cases, on investigation, prove worthy of help. The good accomplished by these two funds cannot be overstated, and the Committee again commend them to those friends who have it in their power to augment financially their usefulness. It is only the interest from the funds which is available for distribution.

The 73rd anniversary festival dinner, held (by kind permission of the Worshipful Court) at the Grocers' Hall, London, was a very great success, Sir Jeremiah Colman, Bart., J.P., D.L., V.M.H., presiding, and nearly 250 ladies and gentlemen being present. The Committee tender to Sir Jeremiah Colman their very grateful thanks for his eloquent advocacy of the claims of the charity on the occasion and for his munificent personal contribution to its funds.

They would take this opportunity also of expressing their thanks to those gentlemen who acted as stewards and collectors; to the donors of flowers and those who kindly arranged the floral decorations; to the horticultural Press for their gratuitous and valued co-operation, and to other friends who in any way assisted to ensure the success of the annual festival.

It is with much gratitude the Committee again acknowledge the kindness of those noblemen, ladies and gentlemen who have thrown open their beautiful gardens to the public on behalf of the funds of the Institution, amongst whom were:—The Rt. Hon. Earl Beauchamp, Madresfield; Lord Northbourne, Betteshanger; Lady Battersea, Overstrand; Sir Frank Crisp, Bart., Henley; E. J. Wythes, Esq., Epping.

Sincere thanks are also given to W. A. Bilney, Esq., J.P., the honorary solicitor, for legal services, and to Messrs. Thos. Manning, J. Willard, and Bert J. Monro for their kind gratuitous services as auditors.

The Committee have also again to acknowledge the kindness of the "George Monro, Ltd.," Concert Committee for devoting a share of the proceeds from their well-known and successful annual concert for the benefit of the funds.

The several auxiliaries have been a source of invaluable help during the past year, and have been well maintained. Special hearty thanks are tendered to the following honorary officers for their services and kindly interest, which is so much appreciated:—

BRISTOL AND BATH.

Presidents.	*Hon. Treasurers.*	*Hon. Secretaries*
Col. H. Cary Batten		Mr. Geo. Harris.

WORCESTER.

Rt. Hon. Earl Beauchamp, K.C.M.G.	John White, Esq.	Mr. Percy G. White.

DEVON AND EXETER.

	Mr. W. Mackay.	Mr. W. Mackay.

WOLVERHAMPTON.

C. T. Mander, Esq., J.P.	Mr. Geo. Bradley	Mr. Geo. Bradley

BERKSHIRE, READING AND DISTRICT.

Mrs. Rowland Sperling.	Arthur W. Sutton, Esq., J.P., V.M.H.	Mr. L. Castle.

LIVERPOOL AUXILIARY.

The Rt. Hon. the Earl of Derby, K.G.	Mr. A. J. Crippen.	Mr. R. G. Waterman.

The Committee are also grateful to Messrs. Sherwood, Sutton and Monro, who gave special contributions for unsuccessful candidates, which proved so beneficial to the recipients; they would also express their best thanks to Mr. N. N. Sherwood for his kind "Sherwood Commemoration Gift" of £500, which will be invested and form a fund to create a perpetual annuity of £20.

The Committee are very glad to be able to acknowledge the distinction of knighthood bestowed upon their treasurer and chairman, and to recognise the generous donation of 300 guineas to the funds from Sir Harry and Lady Veitch "in recognition of the honours conferred upon horticulture."

The Committee have to tender their cordial thanks to the directors of the recent great and successful Royal International Horticultural Exhibition for their kindness in voting two-thirds of the balance of the profits remaining after all liabilities have been discharged to the Institution. It is hoped that the funds will be considerably augmented from this source.

The Committee have to record with deepest regret the deaths of Mr. H. E. Tillman, a valued colleague who served for many years on their board, and who bequeathed to the Victorian Era Fund £100; Mr. Thos. Swift, who had acted as an auditor for a long period; and Mr. W. A. Garaway, hon. treasurer of the Bristol and Bath Auxiliary since its inauguration. The names of these gentlemen will live in the memories of the friends of the Institution, whilst their kindly interest and services will be greatly missed.

Further sad losses of subscribers and supporters during the year are, amongst others, those of Lord Llangattock, a vice-president and chairman at the annual festival dinner in 1901; Herbert J. Adams, Esq., J.P., also a vice-president; H. F. Tiarks, Esq., a lifelong subscriber, who bequeathed £100 for investment to continue his annual subscription; Messrs. C. K. Wild (a subscriber for 45 years) H. F. Dickins, Alex. Dean, V.M.H., W. Fyfe, J. Condie, Edward Sawyer, John Astridge, and others. The places of these warm-hearted and generous friends it will indeed be difficult to fill.

In concluding this brief summary of the year's work, the Committee very earnestly commend this National Horticultural Charity—the only one of its kind in the United Kingdom—to the generous consideration of all lovers of gardens and gardening, the purest of all human pleasures, for a larger measure of support to enable the Institution to extend a helping hand to those toilers in their distress and need who have given of their best for the pleasures and necessities of others.

(Signed) HARRY J. VEITCH,
Treasurer and Chairman of Committee.
GEORGE J. INGRAM,
Secretary.

The chairman, in proposing the adoption of the report, referred to several of the more important items in the year's work. He laid special emphasis on the fact that, although there were 67 applicants for permanent relief and the claim of each applicant had been carefully examined and passed by the committee, still the financial resources of the institution only permitted them to recommend 20 of the candidates for election that day. He pointed to the fact that, nearly half a century ago, the late Dr. Lindley had stated in the *Gardeners' Chronicle* that there must be something like 10,000 gardeners in this country, and only a very small proportion of that number ever contributed to the funds of the institution. Sir Harry Veitch was afraid that the proportion had not greatly increased since Dr. Lindley's statement was published. Yet, for reasons alike of self-interest and charity, professional gardeners might be expected to come forward in large numbers to the support of the Benevolent Institution, which was the only one of its kind, and was perfectly national in its scope.

He referred to several liberal patrons whose deaths during the year had to be mourned, and begged that other enthusiastic helpers would come forward to fill the vacancies. In spite of the fact already mentioned, a review of the year's work brought considerable satisfaction to those who had laboured for the results obtained. At the commencement of 1912 there were 252 pensioners receiving full benefit, and, in addition, 42 others were helped by allowances from the Victoria Era Fund, and 41 by grants not exceeding £5 from the Samaritan Fund. Thus, 338 cases received assistance during the period under review. Amongst unexpected donations, Sir Harry Veitch referred to a sum of £500 contributed by Mr. N. N. Sherwood to commemorate the fact that he

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.—BALANCE SHEET, 1912.

DR.

	£ s. d.	£ s. d.
To Balance		1,135 8 8
„ Amount on Deposit		2,830 0 0
„ Amount on Deposit "Wolfe" Legacy and Interest		1,069 2 6
„ Annual subscriptions	1,240 12 6	
„ Donations at and in consequence of Festival Dinner, including special gift from N. N. Sherwood, Esq.	3,220 7 9	
„ Legacy from the late Henry F. Tiarks, Esq.	100 0 0	
„ Royal Horticultural Society for "Schröder" Annuity	20 0 0	
„ Dividends and interest	894 1 6	
„ Return of Income Tax	50 16 9	
		5,525 18 6
		£10,560 9 8

CR.

	£ s. d.	£ s. d.
By Annuities and Gratuities, including special gifts from Messrs. Sherwood, Sutton, and Monro		4,413 15 6
„ Expenses of annual meeting and election		9 16 4
„ Rent, firing, lighting, &c., including salaries of Secretary and Clerk	610 0 10	
„ Printing and stationery, including reports, polling papers, appeals, &c. £139 9 1 Less advertisements 46 2 6	93 6 7	
„ Postages, reports, polling papers, appeals, &c.	50 17 2	
„ Advertisement in "Fry's Charities"	3 3 0	
„ Carriage, telegrams and incidental expenses	16 12 0	
„ Collection boxes	4 1 6	
„ Deputation expenses	1 14 6	
„ Bank charges	0 3 6	
		779 19 1
„ Post Office telephone		6 10 0
„ Expenses of Festival Dinner	300 8 0	
Less dinner charges	251 9 6	
		48 18 6
„ Investment of "Tiarks" legacy		100 0 0
„ Placed on deposit		2,480 0 0
„ Placed on deposit, "Wolfe" legacy and interest		1,069 2 6
„ Placed on deposit, "Sherwood" commemoration gift for investment		500 0 0
„ Balance with the Treasurer	1,136 3 10	
„ Balance with the Secretary	16 3 11	
		*1,152 7 9
		£10,560 9 8

* Required to meet quarterly payments, due January, 1913.

We have audited the accounts of the Gardeners Royal Benevolent Institution as set forth in the Balance-sheet, also verified the securities deposited with the bankers, and, having obtained all the explanation required, we report that we found the books in order, and, in our opinion, the Balance-sheet is properly drawn, showing a true and correct account of the Institution affairs.

January 20, 1913.

THOMAS MANNING.
BERT J. MONRO.
J. WILLARD.

VICTORIAN ERA FUND.—BALANCE SHEET FOR 1912.

DR.

	£ s. d.	£ s. d.
To Balance, January 1, 1912		142 17 9
„ Donations	5 5 0	
„ Dividends	219 14 8	
„ Return of Income Tax	14 13 10	
		239 13 6
		£382 11 3

CR.

	£ s. d.	£ s. d.
By Gratuities		225 15 0
„ Balance in hand, December 31, 1912		156 16 3
		£382 11 3

GOOD SAMARITAN FUND.—BALANCE SHEET FOR 1912,

DR.

	£ s. d.	£ s. d.
To Balance, January 1, 1912		351 6 2
„ Donations	63 13 0	
„ Dividends	133 18 8	
„ Return of Income Tax	8 3 10	
		205 15 6
		£557 1 8

CR.

	£ s. d.	£ s. d.
By Gratuities		212 18 4
„ Balance in hand, December 1, 1912		344 3 4
		£557 1 8

January 20, 1913.

Audited and found correct. THOMAS MANNING. BERT. J. MONRO. J. WILLARD.

completed 50 years of association with the
n of Messrs. Hurst & Son; a pensioner for the
rwood memorial pension had been selected by
. Sherwood. It was a matter of common know-
ge also that the directors of the Royal Inter-
ional Horticultural Exhibition were going to
e to the Benevolent Institution two-
rds of the balance from the exhibi-
n, after discharging all liabilities, and
was proposed that the sum should be
ested for the maintenance of a pensioner,
o would be known as the International Horti-
tural pensioner. Referring to the festival din-
of last year, Sir Harry Veitch spoke in ap-
ciative terms of the kindness of Sir Jeremiah
lman, who presided on that occasion. It was
posed that day to elect Sir Jeremiah Colman
ice-president of the institution. He had very
eat pleasure in announcing that Mr. Leopold
Rothschild had consented to preside at the next
tival dinner, and it was interesting to recall
e fact that it was 25 years ago that Mr. Roth-
ild filled the chair on a similar occasion. The
xiliaries had worked hard and successfully,
d the committee felt a large measure of in-
btedness to all who had helped the work of
e auxiliaries in the provinces.
The chairman's motion was seconded by Mr.
illiam Iceton, and accepted with unanimity.
The meeting then proceeded to the re-election
officers. Sir Harry J. Veitch was re-elected
easurer on the proposition of Mr. Arthur Sut-
n, seconded by Mr. R. Ballantine. Sir Harry
itch, in accepting the office, stated that it was
s 27th year as treasurer, but, so long as he felt
le to carry out the duties of that office, he
uld find his greatest pleasure in the work. Mr.
eorge Munro proposed the re-election of Mr.
. J. Ingram as secretary, and, after Sir Harry
itch had seconded the resolution, it was
opted unanimously. Several members of the
mmittee were re-elected, and Mr. Mash, Covent
arden, was elected in the place of the late Mr.
. E. Tillman. The auditors and arbitrators
ere also re-elected. Scrutineers were appointed
r the ballot, and the election was proceeded
ith, the results of which were printed in our
st issue.

THE FRIENDLY SUPPER.

In the evening a number of the supporters of
he institution assembled in the same hotel on
he occasion of the annual friendly supper. Sir
arry J. Veitch presided.
Amongst the speakers to the various toasts
ere Sir Harry Veitch, Mr. W. A. Bilney, Mr.
. Hudson, Mr. E. Sherwood, Mr. P. C. M.
eitch, Mr. Percy G. White, and Mr. L. Castle.
was announced by the chairman that Mr.
eorge Monro had kindly given the sum of
10 towards a pension for the unsuccessful can-
idate, William Greenshields.

COVENTRY CHRYSANTHEMUM.

January 23.—The annual meeting of the
bove society was held on this date, Alderman
. H. Drinkwater, J.P., presiding. The presi-
ent, on behalf of the society, handed to Mr. E.
ord a medal for his honorary exhibit at the
ecent show. The income for the year amounted
o £189 5s. 9d., and the expenditure to
132 1s. 2d., leaving a balance of £57 4s. 7d.
bout £12 more was spent in prizes than
n the previous year, and but for this addi-
ional expenditure the result would have been a
ecord one. The president congratulated the
ociety upon its continued success. Alderman
rinkwater was re-elected president, Alderman
atchelor treasurer, and Mr. G. Griffin secretary.
he committee was re-elected with one or two
lterations, with Mr. S. O. Beaumont as chair-
nan and Mr. A. Scott, vice-chairman. It was
ecided that the next exhibition should be held
n November 6, 7 and 8, 1913.

GARDENING APPOINTMENTS.

Mr. T. H. Roberts, for the past 4½ years Foreman at Thornes House Gardens, Wakefield, as Gardener to W. H. Haslam, Esq., Oakleigh, Burnley, Lancashire. (Thanks for 1s. for R.G.O.F. box.—Eds.)

Mr. R. T. Law, for 2 years head of the Alpine department to the Earl of Lonsdale, Lowther Castle, Penrith, as Gardener to Miss A. Smith, Rhine Hill, Stratford-on-Avon, Warwickshire.

Mr. Robert Anderson, for 4 years Gardener to Colonel Mainwaring, C.M.G., at Rangeston, Angle, as Gardener also to the same gentleman at The Hall, Angle, Pembroke.

Obituary.

A. Ryall.—It is with regret that we record the death of this promising young gardener, who died whilst returning from a plant-collecting expedition in Colombia, on behalf of Messrs. Mansell and Hatcher, Ltd. Mr. Ryall, who was only 27 years of age, had secured a large and interesting consignment of Orchids, but he died on board ship when within three days of England and was buried at sea on January 16. Deceased was engaged for some years in the nursery of Messrs. Charlesworth & Co., and he also served under Mr. G. Hunter at Chillingham.

William Shearer.—We regret to record the death of this gardener, which occurred at his home at Upper Tooting on the 17th ult. in the 77th year of his age. To many, especially in the south, his name is little known, but there was a time when the name of Shearer was a household word in connection with gardening, more particularly in the neighbourhood of Edinburgh, where his brothers held responsible positions. In 1862 Mr. Shearer left Trentham Hall to take charge of the gardens at Dover House, Roehampton, then owned by Viscount Clifden, where he remained for four years. In 1866 he was recommended by Messrs. James Veitch & Sons to a Government position in India, where he remained for a period of 25 years.

ENQUIRIES AND REPLIES.

Mice in the Garden.—In reply to *G. W.*, the following method of trapping mice in the garden should be tried:—Procure an old drum or bucket which holds water and cut two holes in it, one on each side, exactly opposite each other and ½ inch from the top rim. Insert a light, round stick, to which is affixed a wooden roller about 5 to 6 inches in diameter, through the holes. Nail roasted cheese on the roller and

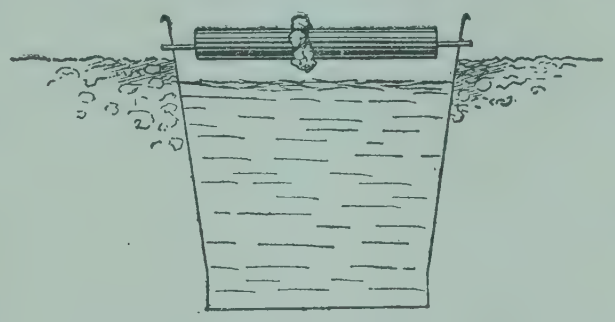


Fig. 39.—Device for trapping mice.

then fill the drum or bucket with water to within about 2 inches from the roller. Dig out a hole in the garden where the mice frequent and plunge the drum or bucket to about ½ inch above the stick, so that the roller may revolve easily. The mice will walk along the roller for the bait, and, in their efforts to secure it, will tumble into the water. *F. E. Cottrell, Lympne Castle Gardens, Hythe.*

THE WEATHER.

THE WEATHER IN WEST HERTS.

Week ending January 29, 1913.

The heaviest fall of snow as yet this winter.—This was, on the whole, a warm week. On three consecutive days the temperature in the thermometer screen rose to 50°, and on the warmest night the exposed thermometer did not fall lower than 38°. The ground is, at the present time, about 1° warmer than the average, both at 1 foot and 2 feet deep. In the middle of the week, however, the temperature at 1 foot deep was 4° warmer than is seasonable. Rain fell on three days, to the total depth of three-quarters of an inch. About a third of that quantity was due to snow, which, at 9 p.m. on the 22nd, covered the ground to the average depth of 3 inches—making this the heaviest fall of snow recorded here as yet this winter. The snow, however, on the ground, was gradually melted by rain which came after, so that by the following morning the whole of the snow had almost entirely disappeared. During the week four gallons of rain and melted snow came through the bare soil percolation gauge, and three gallons through that on which short grass is growing. The sun shone on an average for 43 minutes a day, which is 1 hour 5 minutes a day short of the mean daily duration for the same period in January. The sun shone brightly for 5 hours on the 26th, but on five other days no sunshine at all was recorded. The wind was high in the early part of the week, and in the windiest hour the mean velocity reached 18 miles—direction W.S.W., but afterwards calms and light airs alone prevailed. The average amount of moisture in the air at 3 o'clock in the afternoon exceeded a seasonable quantity for that hour by 3 per cent. *E.M., Berkhamsted, January 29, 1913.*

MARKETS.

COVENT GARDEN, January 29.

[We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general averages for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—Eds.]

Cut Flowers, &c.: Average Wholesale Prices.

	s.d.	s.d.
Arums (Richardias)	3 0	4 0
Azalea, per dozen bunches	2 6	3 0
Bouvardia, per dozen bunches, white and coloured		
Camellias, white, per dozen	1 6	2 0
Carnations, per dozen blooms, best American varieties	1 6	2 0
— smaller, per doz. bunches	12 0	15 0
— Carola (crimson), extra large	3 0	4 0
— Malmaison, p. doz. blooms:		
— — pink	12 0	15 0
Chrysanthemums:		
— white, per dozen	2 0	4 0
— — per dozen bunches	8 0	10 0
Daffodils, per doz. bunches:		
— Golden Spur	3 0	4 0
— Sir Watkin	4 0	5 0
— Henry Irving	3 0	—
— Victoria	5 0	—
— Princeps	3 0	3 6
Eucharis, per dozen	2 6	3 0
Freesia, white, per doz. bunches	2 0	2 6
Gardenias, per box of 15 and 18 blooms	6 0	8 0
Lilium auratum, per bunch	2 0	2 6
— longiflorum, per doz., long	3 0	3 6
— — short	2 0	2 6
— lancifolium alba, long	1 6	2 0
— — short	1 3	1 6
Lilium speciosum rubrum, p. doz., long	1 6	2 0
— — short	1 0	1 3
Lily of the Valley, per dozen bunches:		
— extra special	12 0	15 0
— special	9 0	10 0
— ordinary	6 0	8 0
Mignonette, per doz. bunches	3 0	4 0
Orchids, Cattleya, per doz.	15 0	—
— Cypripedium	2 0	3 0
— Odontoglossum crispum	4 0	5 0
Pelargoniums, p. dz. bunches, Double Scarlet	6 0	8 0
Roses, 12 blooms:		
— Lady Hillingdon	3 0	4 0
— Liberty	3 0	6 0
— Madame A. Chatenay	8 0	—
— Niphetos	1 6	2 0
— Richmond	3 0	6 0
Spiræa (Astilbe) japonica, per dz. bunches	5 0	6 0
Tuberose, p. doz. blooms, long	1 3	—
— — short	0 10	1 0
Tulips, per dozen bunches:		
— double red	10 0	12 0
— — orange	10 0	12 0
— — pink	10 0	12 0
— red	5 0	6 0
— white	6 0	—
— yellow	7 0	—
— bronze	5 0	6 0
— pink	8 0	9 0
Violets, Princess of Wales, per dozen bunches	1 6	2 0
— Anemone fulgeris	2 6	3 0

Guernsey Flowers: Average Wholesale Prices.

	s.d.	s.d.
Narcissus:		
— Soleil d'Or	1 6	2 0
— Grand Primo	1 6	1 9
— Princeps	1 6	2 0
Narcissus:		
— Henry Irving	2 0	2 6
— Gloriosa	1 6	1 9
— Poeticus	4 0	5 0

French Flowers: Average Wholesale Prices.

	s.d.	s.d.
Anemone, double pink, per doz.	1 6	2 0
Lilac, white, per bunch	3 6	4 0
— mauve	4 0	6 0
Marguerite, yellow, per doz. bnchs	1 9	2 0
Mimosa, pr. bunch	0 9	1 0
Narcissus, Paper White, pr. pad, 48 bunches	5 0	6 0
— Soleil d'Or, p. pad	5 0	6 0
Ranunculus, per doz. bunches:		
— Barbaroux	4 0	5 0
— double scarlet	8 0	9 0
— yellow	8 0	10 0
— bronze	10 0	12 0
— carmine	5 0	6 0
Roses, Safrano, pkts. of 24 blms.	1 6	1 9
Violets, per pad	3 0	4 0
— Parma, large bunches, each	2 0	—

Cut Foliage, &c.: Average Wholesale Prices.

	s.d.	s.d.
Adiantum Fern (Maidenhair), best, per doz. bunches	6 0	7 0
Agrostis (Fairy Grass), per dz. bunches	2 0	4 0
Asparagus plumosus, long trails, pr. ½ doz.	1 6	2 0
— medium, doz. bunches	12 0	18 0
— Sprengeri	10 0	12 0
Berberis, natural, per doz. bnchs	3 0	4 0
Carnation foliage, doz. bunches	3 0	—
Croton foliage, various, dz. bchs.	12 0	15 0
Cycas leaves, artificial, per doz.	3 0	12 0
Eulalia japonica, per bunch	1 0	1 6
Moss, gross bnchs.	6 0	—
Myrtle, dz. bchs. (English), small-leaved	6 0	—
— French	1 0	—
Smilax, per bunch of 6 trails	1 0	1 8

Plants in Pots, &c.: Average Wholesale Prices.

	s.d.	s.d.
Azalea, white and coloured, per dozen pots	30 0	36 0
Aralia Sieboldii, dz.	6 0	7 0
Araucaria excelsa, per dozen	18 0	21 0
Asparagus plumosus nanus, per dozen	10 0	12 0
— Sprengeri	8 0	9 0
Aspidistra, p. dz., green	21 0	30 0
— variegated	30 0	60 0
Cinerarias, p. doz.	8 0	9 0
Cocos Weddeliana, per dozen:		
— 60's	6 0	12 0
— larger, each	2 6	10 0
Croton, per dozen	18 0	30 0
Cyclamens, 48's	10 0	15 0
Cyperus alternifolius, p. dz.	5 0	6 0
— laxus, per doz.	4 0	5 0
Dracæna, green, per dozen	10 0	12 0
Erica hyemalis	10 0	12 0
— gracilis, 48's	10 0	12 0
Ferns, in thumbs, per 100	8 0	12 0
— in small and large 60's	12 0	20 0
— in 48's, per doz.	6 0	
— choicer sorts, per doz.	8 0	12 0
— in 32's, per dozen	10 0	18 0

Plants in Pots, &c.: Average Wholesale Prices *(Contd.)*

	s.d.	s.d.
Ficus elastica, per dozen	9 0	12 0
Genistas, per doz.	10 0	12 0
Geonoma gracilis, 60's, per dozen	6 0	8 0
— larger, each	2 6	7 6
Hyacinths, white, in pots, p. doz.	8 0	9 0
Kentia Belmoreana, per dozen	5 0	42 0
— Fosteriana, 60's, per dozen	4 0	6 0
— — larger, per dozen	18 0	63 0
Latania borbonica, per dozen	12 0	30 0
Lilium lancifolium rubrum in pts., per dozen	18 0	21 0
Lilium lancifolium alba, in pots., dozen	18 0	21 0
Lilium longiflorum per dozen	18 0	30 0
Lily of the Valley	18 0	21 0
Marguerites, in 48's, per doz., white	8 0	10 0
Pandanus Veitchii, per dozen	36 0	48 0
Pelargonium (Geranium), double scarlet, 48's	4 0	5 0
— other varieties	5 0	6 0
Phœnix rupicola, each	2 6	21 0
Spiræa japonica, per dozen pots	6 0	8 0
— pink	10 0	12 0
Tulips, per box of 24's:		
— white	1 9	2 0
— pink	2 0	2 6
— scarlet (Tulips or Bulbs)	1 9	2 0

REMARKS.—Narcissi are arriving from Guernsey, the Scilly Islands and France, in large quantities and in a splendid condition. Tulips are very abundant, but owing, no doubt, to the unfavourable weather, the demand for them is small, and their prices are very low. Lily of the Valley is a short supply. English Daffodils are particularly good and cheap. Trade in Pot Plants is very quiet.

Fruit: Average Wholesale Prices.

	s.d.	s.d.
Apples:		
— Cox's Orange, ½ bushel	6 0	10 0
— Cooking, per bushel	5 0	6 0
— French Russets, box	7 0	8 6
— Canadian, brls.	18 6	30 0
— Wenatchee, p. case	8 0	9 6
— American, brls.	18 6	30 0
— Californian Newtowns, case	7 0	8 0
— Nova Scotian, per barrel	14 0	22 0
— Oregon, Newtown Pippin, per case	10 6	11 6
Apricots, Cape, per box	6 0	8 0
Bananas, bunch:		
— Doubles	10 0	12 0
— No. 1	9 0	10 0
— Extra	11 0	12 0
— Giant	12 0	16 0
— Loose, p. doz.	0 6	1 6
— Red coloured	4 6	5 6
— Jamaica, per ton	£9	£12
— Jamaica Ordinary, per box (9 doz.)	4 0	5 6
Dates, per dozen	2 9	3 0
— Egyptian, cwt.	25 0	—
Cranberries, p. case	9 6	12 0
Grape Fruit, case:		
— 96's		
— 80's		
— 64's	16 0	22 0
— 54's		
— per dozen	4 0	6 0
Grapes (English), per lb.:		
— Canon Hall	8 0	12 0
— Muscat of Alexandria	20 0	—
— Black Alicante	1 2	2 6
— Almeria, barrel	16 6	22 6
— Gros Colman	1 2	2 6
— Belgian, p. lb.	1 0	1 2
Lemons, per case:		
— Malaga	16 0	—
Lemons, Messina, per case	9 0	21 0
Lychees, 1lb. box	1 6	—
Nuts, Almonds, per bag	52 6	—
— Brazils, cwt.	54 0	62 0
— Spanish, sack	40 0	42 0
— Barcelona, per bag	35 6	36 6
— Cocoanuts, 100	18 0	23 0
— English Cobs, per lb.	0 3	0 4
— Chestnuts, bg.	14 0	26 0
— Walnuts French, per cwt.	30 0	—
— Naples, p. cwt.	64 0	—
Nectarines, Cape, box	15 0	18 0
Oranges:		
— Seville, sours, case	17 6	—
— Messina, bitters, case	8 0	8 6
— Jaffa, per case	9 0	9 6
— Mandarines, p. box	1 3	6 6
— Florida Tangerines, p. case	14 0	16 0
— Denia, per case	12 6	28 0
— Californian, Seedless, case	11 6	13 6
Peaches, Cape, box	10 0	20 0
Pears:		
— French, per crate	6 0	8 0
— Dutch Catillac, ½ bushel	3 6	—
— Californian, Winter Nelis, per case	13 6	14 6
— — Easter Beurré, p. case	8 0	8 6
— American, per barrel	7 0	8 0
Pineapples, St. Michael	2 6	4 0
Plums, Cape, box	8 0	10 0
Rhubarb, dozen bundles	0 10	1 0
— Natural	3 0	—

Vegetables: Average Wholesale Prices.

	s.d.	s.d.
Asparagus, Giant, per bundle	10 0	12 0
— Paris green	3 6	4 0
— Sprue, bundle	0 8	—
— Dijon	2 6	—
— Lauris	5 6	—
Artichokes (Globe), per dozen	2 0	—
— ground, ½ bus.	1 6	—
— Batavia, French, dozen	2 6	3 6
Beans:		
— Guernsey, lb.	3 0	—
— English, per lb.	3 0	3 6
— Madeira, per handle	3 0	—
Beetroot, p. bushel	1 6	2 6
Broccoli, bushel	1 0	1 6
— bags	2 0	2 6
Cabbages, p. tally	3 0	—
— boxes	1 6	—
— red, per dozen	1 0	—
Carrots (English), pr. doz. bun.	2 0	3 0
— unwashed, per bag	2 6	—
— washed, bag	3 0	3 6
Cauliflowers per tally	7 0	10 0
— boxes	2 3	4 6
— Cornish, crate	3 0	4 0
— Italian, crate	2 9	—
Celeriac, per doz.	1 0	1 6
— French, p. doz.	3 0	—
Celery, per dozen "fans"	12 0	18 0
— unwashed	12 0	15 0
Chicory, per lb.	0	3½
Cucumbers, per dozen	14 0	16 0
Endive, per dozen	1 0	1 6
— French p. doz.	2 0	—
Greens, per bushel	1 3	—
— bags	2 0	—
Herbs (sweet), pkt. per gross	10 0	—
Horseradish, 12 bundles	12 0	—
Leeks, per doz.	0 8	1 0
Lettuce, French, per crate	1 6	3 9
— per dozen	2 0	—
— English, dozen	1 0	—
Mint, per dozen bunches	3 0	—
Mushrooms, cultivated, per lb.	0 9	0 10
— broilers	0 6	0 8
— field	0 8	—
Mustard and Cress per doz. punnets	0 4	0 6
Onions (English) per bag	2 6	—
— per bushel	1 6	2 0
— picklers, per bag	3 6	—
— (spring), per doz bunches	3 0	—
— (Spanish), case	5 6	7 0
— Dutch, bags	2 0	—
Peas, French, pad of 10 lb.	5 0	—
— Guernsey, p. lb.	2 0	3 6
Parsley, per doz. bunches	2 0	—
Parsnips, per bag	2 0	—
— per bushel	1 0	—
Radishes (English) per dozen	1 6	—
Sage, per dozen	2 0	—
Savoys, per tally	2 6	4 0
— per box	1 6	—
Seakale, punnets	0 8	1 3
— outdoor, box, 12 lbs.	4 0	—
Spinach, p. bushel	2 6	3 0
— French, crate	2 6	—
Sprouts, ½ bushel	1 0	1 3
— bags	1 6	—
Sprouts, bushel	1 9	—
Scotch Kale, busl.	1 6	—
Tomatos, Canary, per bundle	10 0	16 0
Thyme, per dozen bunches	2 0	—
Turnips (English), per dz. bunches	1 6	3 0
— per bag	3 0	3 6
— unwashed, bag	2 6	—
Turnip tops, bushel	1 3	1 6
— per bag	2 6	3 0
Watercress, p. dz. bunches	0 4	0 8

REMARKS.—Apples are selling better, the prices varying according to the quality and condition of the fruit. Pears are limited to the following varieties:—Easter Beurré and Winter Nelis (Californian). Supplies of Grapes (Gros Colman and Black Alicante) continue about equal to the demand. Consignments of fruit from Cape Colony to hand this week consisted of Peaches, Apricots, Nectarines, and Plums, in all about 1,000 cases. Mushrooms are fairly plentiful. Teneriffe Tomatos have been a shorter supply, and many of the samples are far from satisfactory. Dwarf Beans from all sources have not been so plentiful during the past week. English and French Asparagus is obtainable at reasonable rates for the time of year. Seakale of very fine quality is obtainable. Cucumbers are plentiful, but trade in them is slow. Other vegetables continue plentiful and cheap. *E. H. R., Covent Garden, January 29, 1913.*

Potatos.

	per cwt. s.d.	s.d.		per bag. s.d.	s.d.
Bedfords	4 0	4 6	Dutch	3 0	3 9
Kents	4 3	5 0	Belgian	3 6	4 6
Blacklands	3 6	3 9	German	4 0	4 9
Evergoods	3 6	4 3	Dunbars	5 6	6 3
King Edward	4 3	5 0	Scotch (grey soil)	4 0	4 9

REMARKS.—The Potato trade is about the same as last week. Consignments have not been very heavy, either from home or foreign growers. Prices remain fairly constant. *Edward J. Newvorn, Covent Garden and St. Pancras, January 29, 1913.*

Answers to Correspondents

BIG BUDS ON HAZEL: *F. J. H.* The buds are infested with Eriophyes avellanae which is closely related to, but distinct from, the mite which attacks the Black Currant. The nut mite will not infest Currants.

CELERY BOLTING: *Enquirer.* Owing to the abnormal season, many varieties of Celery run to seed. The early, quick-maturing varieties, which include many of the pink sorts, should never be grown for late use. The hardiest and best varieties for this season are undoubtedly the red sorts, such as Standard Bearer and Major Clarke's red, though in ordinary seasons pink varieties, if uninjured, generally remain in a good condition until the middle or end of February. Many other kinds of vegetables have bolted this season, including Kales of sorts, which have already run up and produced flower-buds.

GROWING GRAPES WITHOUT ARTIFICIAL HEAT: *F. H.* It is quite possible, as you have been informed, to grow a good crop of Grapes without artificial heat in your neighbourhood, provided the house has a sunny aspect. We can point to a house, which, for the last four years has borne a large crop of more than average merit, and although furnished with a good heating apparatus, the fire has never been lighted. The vines have been under skilled periodical supervision from the time they were planted. Black Hamburgh and Buckland Sweetwater are the only varieties to be relied upon, and Black Hamburgh is the better sort. If the border has been prepared properly and fibrous roots are to be found there in quantity, no great difficulty should be experienced. But if, on the contrary, the borders contain only large roots and no fibrous ones, it will be advisable to cut a trench 6 to 8 feet from the stems, and deep enough to sever the lowest roots. If this is done in the autumn before the leaves have all fallen fresh feeding roots will be formed nearer home, where they can be more readily supplied with fertilising material and water. It is best not to plant other crops in vine borders, but if anything is grown on them they should not be dug, but merely have the surface soil broken, and a few seeds of annuals scattered thinly. Borders should be made level or nearly so, and not, as is common, sloping steeply, for this makes the watering a matter of difficulty. If the vine has not be pruned that operation should be perform immediately, leaving the rods, if there is mo than one, not closer than 3 feet apart, a cutting the side shoots back to one or t buds. If the growths of former years ha been weakly, it will be a good plan encourage fresh rods to grow up between t old ones, thinning out the latter sufficient for the new growths to get proper exposure the light. No growths should be allowed develop after midsummer, or in positio where they cannot be exposed to s and air. The points of the side shoo should be pinched with the thumb-n before the shoots attain 8 inches in lengt and they will afterwards, if the vine vigorous, stretch out to 2 or 3 feet. O bunch only should be left on each later growth, and if the vine is weakly it should n be allowed to bear much fruit. After the bu have started growing, the house will ne ventilation on all favourable occasions, co mencing early in the morning before the te perature rises more than 1° or 2°, allowi it to rise to 80°, and closing the ventilato sufficiently early in the day to keep as hig a temperature as possible without exceedi that figure for as long as daylight last During the summer 10° higher for a sho time will do no harm up to the time t Grapes commence to colour. It is importa not to open the ventilators so wide at one tim as to seriously lower the temperature of t house. If the roots are under proper contro the border should be sprinkled with freshl slaked lime now at the rate of one peck to perch. About three doses of a concentrat manure should be applied during the growi season, the first before the flowers open an the last when the berries commence to colou The border should never be allowed to becon very dry under the surface. A light mulchin of stable manure is beneficial during a h summer, and should be applied after the bord has become warmed by the sun.

GRUB IN APPLE TREE: *M. C.* The grub is th larvæ of the Leopard moth, Zeuzera Æscul If other burrows are observed in the App trees push a piece of stiff wire into th tunnels to kill the grubs.

IRIS STYLOSA: *G. M.* The damage has mo probably been caused by the larvæ of one the Noctuæ moths, perhaps that of th Cabbage moth, Mamestra brassicæ. The i sects feed at night, and should be sought f with a lantern.

MUSHROOMS: *York.* The unhealthy condition the Mushrooms is due to the presence of fungus (Hypomyces perniciosus). Try drenc ing the soil with a solution of nitrate of po ash, employing 2 ounces of nitrate in 1 gallo of water. If this does not check the diseas remove all the materials of the bed and sta afresh.

NAMES OF PLANTS: *J. B., Falfield.* Corre speciosa magnifica.—*H. C., Redhill.* 1, Phi lyrea latifolia ilicifolia; 2, Berberis japonica 3, Pieris japonica; 4, Skimmia japonica; Cupressus Lawsoniana lutea; 6, Cassinia fu vida; 7, Ligustrum lucidum; 8, Pinus excels —*H. B.* 1, Cupressus macrocarpa lutea; Cassinia fulvida; 3, Cupressus Benthamian arizonica; 4, Abies nobilis.—*W. T.* Odont glossum constrictum; 2, Oncidium prætextum 3, Dendrobium moniliforme; 4, Cœlia tripter —*J. A. Forfar.* Ornithogalum lacteum (yo can obtain bulbs from most of the large bul merchants).—*Foreman.* Cypripedium Leeanu (an ordinary variety).—*G. S. P. H.* 1, Era themum pulchellum; 2, Sempervivum arb reum; 3, Asparagus myriocladus; 4, Selaginel Martensii; 5, Selaginella Wildenovii; 6, Cole (garden variety).

VINE ROOTS: *W. W.* The injury is due to th soil being too wet; the drainage should b examined with a view to increasing i efficiency.

Communications Received.—J. W., Britwe'l—J. L. W. R. C.—Wermhite—W. W., Newcastle—F. J.—R. P. —W. P.—A. B.—G. M.—W. M.—W. H. Y.—C. S. F. P. & Co.—H. B.—P. E. L.—W. K., Austria—S. & Sons F. B.—J. B. R.—Dr. K. S., Germany—H. S. T.—W. R. —W. J. T., Jamaica—R. A. D., Cambridge—L. K.—L. —M. A. K.—G. W., South Africa—O. S.—L. F. P.—J. —Hix—E.H.W., U.S.A.—G. T., Versailles.

THE
Gardeners' Chronicle
No. 1,363.—SATURDAY, February 8, 1913.

CONTENTS.

American notes—
National flower show at New York ... 84
Apples with more than 10 seeds 90
Berries, a bountiful crop of 90
Birds, the food of ... 89
Books, notices of—
Makers of British Botany 81
Small Landholders' Handbook 90
Calanthes, two new ... 89
Cliveden, Buckinghamshire 82
Corsican Pine, the ... 90
Florists' flowers—
Collerette Dahlias ... 85
Perpetual-flowering Carnations 85
Sweet Peas... 85
Foreign correspondence—Notes from Southern Italy 81
Fruit trade, the 89
Fruit wood, ripened ... 91
Gardeners, three famous 90
"Geo. Monro" concert 88
Heredity and mutation... 89
Leaves, the loss of water by 88
Lobelia Erinus floribunda 89
Obituary—
Martin, John 94
McDonnell, Patrick . 94
Nicholas, John... ... 94
Ross, John 94
Webb, Edward ... 94
Primula Allionii 85
Rainfall in 1912 91
Rosary, the—
Cultural hints for February 84
Societies—
Manchester and North of England Orchid ... 94
National Dahlia .. 86
Royal Horticultural ... 91
Scottish Hort.... ... 89
Tea industry, lectures on the 89
Traces of bygone civilisations 88
Veitch, Sir Harry, French honour for ... 88
Week's work, the—
Flower garden, the ... 86
French garden, the ... 87
Fruits under glass ... 86
Hardy fruit garden, the 86
Kitchen garden, the ... 87
Orchid houses, the ... 86
Plants under glass ... 87

ILLUSTRATIONS.

Cliveden, Buckinghamshire, views in the gardens at 82, 83, 84
King, Mr. David, portrait of 89
Odontioda Madeline var. Prince of Orange 92
Primula Allionii growing on the Maritime Alps 85
Webb, Edward, portrait of the late 94

MAKERS OF BRITISH BOTANY.*

TWO years ago a course of 10 lectures was delivered in the University of London on the subject of "British Botanists." The course aroused considerable interest, and as a consequence it was decided to publish the substance of the lectures in book form. To this decision the volume under review owes its origin. The work entailed in preparing it has been borne by Professor Oliver, who has carried out a difficult and onerous task with conspicuous success. It has included the provision of a considerable number of biographies, which, on account of exigencies of time, could not be included in the series of lectures. Thus the work which Professor Oliver has discharged has consisted in convoying without loss the writings of no fewer than 18 contributors to the offices of the Cambridge University Press. When it is remembered how difficult is the task of procuring even one promised contribution from a colleague, surprise will be felt that Professor Oliver has contrived to bring his work to completion in the relatively short time of 18 months. The British botanists whose biographies are included in the volume are Robert Morison (born 1620), John Ray (1627), Nehemiah Grew (1641), Stephen Hales (1677), John Hill (1716), Robert Brown (1773), Sir William Hooker (1785), the Rev. J. S. Henslow (1796), John Lindley (1799), William Griffith (1810), Arthur Henfrey (1819), William Henry Harvey (1811), the Rev. Miles Berkeley (1803), Sir Joseph Gilbert, of Rothamsted (1817), William Crawford Williamson (1816), Harry Marshall Ward (1854), and Sir Joseph Hooker (1817). To this list must be added the names of the Edinburgh professors from 1670 till 1887—James Sutherland, the Prestons, Charles Alston, John Hope, Daniel Rutherford, Robert Graham and John Hutton Balfour—whose biographies are contributed by their distinguished successor, Professor Isaac Bayley Balfour. Few botanists will be inclined to deny the title of any of these adepts in their science to a place in this national dictionary of distinguished botanists; but at the same time many will deplore with the editor the omission from the list of the names of Knight and Bentham. Lindley, who was a fine judge of intelligence, regarded Bentham as the ablest botanist of his time, and Knight deserved inclusion not only on account of his contributions to pure science, but also because he was one of the very few botanists—and among them the greatest—who has contributed to our horticultural knowledge of plants. Other names of men who have done good service also occur to the mind as worthy of inclusion in this volume, and we welcome the assurance offered by Professor Oliver in the introduction to this work that "such omissions . . . have not been deliberate, and that it will no doubt be possible to repair them should a second edition of the work be called for."

A perusal of the volume convinces us that the occasion for reparation will not be long delayed, and the remarkable excellence of the biographies which it contains makes us the more impatient to see men like Knight and Bentham dealt with in a similarly admirable manner.

The present-day botanist who takes up this work will turn naturally to those pages which are devoted to his favourite "hero." For he is, indeed, an ungenerous spirit who does not cherish a measure of hero-worship for the pioneer of the path which he follows.

We have adopted a similar course—discarding for the occasion the assumption of catholicity dear to the reviewer, and adopting a method of fractional analysis. The botanists whose biographies we have read are those of physiological proclivities—with the immortal Stephen Hales at their head.

The volume emerges triumphantly from the test, and, indeed, we have never read a more charming brief account of a great man than that written by Sir Francis Darwin on the subject of Hales.

This is not the occasion to review the contributions of Hales to vegetable physiology, but we cannot resist the temptation to quote a few lines from the biography, since they show—what is generally evident in this series of memoirs—that the writer is possessed of the twin gifts of insight and sympathy without which biographies are as dead as their subjects:—

"There is in Hales's writing a limpid trustfulness and simplicity unconsciously decorated with 18th century words and half-rusticities, which give it a perennial charm, and inasmuch as I desire to represent Hales not merely as a man to be respected, but also to be loved, it will be as well to give what is known of the personal side of his character before going on to a detailed account of his work."

Equally conspicuous as illustrations of the fine art of biography are Sir William Thiselton-Dyer's account of the life and work of Marshall Ward, and Professor J. B. Farmer's appreciation of Robert Brown—facile botanicorum princeps, Britanniæ gloria et ornamentum.

The older generation of horticulturists will be glad that Professor Oliver has included Lindley—for so many years the distinguished editor of this journal—in the volume. They will read also with particular pleasure Mr. Massee's account of the epoch-making work of Berkeley on the subject of plant-pathology; of which work much first saw the light in the pages of the *Gardeners' Chronicle.*

It is not often possible to give wholehearted praise to a book; but such praise may be given to this botanical anthology. We hope that it will be made a text book in our universities, and that thereby our youth engaged in the study of botanical science may be brought up in the knowledge and veneration of the men who laid the foundations on which modern botanists are building.

A more detailed review of the contents of this interesting volume must be left for a subsequent occasion, but we cannot conclude our general appreciation without offering the authors and the editor our cordial congratulations on the manner in which they have discharged the pious debt due to their predecessors.

* *Makers of British Botany:* a Collection of Biographies by Living Botanists. Edited by F. W. Oliver, F.R.S. (Cambridge University Press.) 1913. pp. 332. 9s. net.

FOREIGN CORRESPONDENCE.

NOTES FROM SOUTHERN ITALY.

THE unusual warmth of the early winter has induced many flowering shrubs to flower sooner than they have done for years past. Notable among these is Prunus Mume. This is a plant which is seldom seen in gardens in this part of Italy (Naples). Evergreens are mostly grown, and only the commonest kinds of flowering shrubs, such as the Spiræa, Weigela, Deutzia, and Lilac. The Prunus was in flower just at Christmas time, and made a most beautiful picture; the plants form a large group, and every branch was covered with bright, delicate blossoms in the double white and double rose-coloured varieties.

Prunus serrulata speciosa was also very early this season, and flowered about the middle of December, whereas the usual time is January. The flowers, which are single and of a bright rose-pink colour, are produced in clusters of three to five. This variety, by the way, would be found very useful for forcing purposes.

Acacia Baileyana, A. podalyrifolia, and A. dealbata were also in flower at Christmas, but were looking their best in the middle of January. Mr. Winter's new Acacia hybrids are very fine. I regard A. Neuffeldii as the best and the earliest. Just now it is a perfect shower of gold, and the admiration of all beholders. Acacia dealbata is

quite common, and deservedly popular for its freely-growing habit and delicious perfume. It is known here, as in the English markets, as "Mimosa."

A. Bayleyana is a fine variety for cutting, but it has no scent. A. podalyrifolia is a very slow grower, and the bush has an irregular habit, which makes it a little less attractive than the others. It is difficult as yet to judge of the growth of the hybrids, as they are still very small.

The finest blue flower available at Christmas was Lithospermum rosmarinifolium. From November, right on to May this little perennial is covered with blossoms. It would be more generally cultivated were it not for the fact that it is difficult to propagate; very few of the cuttings which are set here can be induced to grow, and I have never seen the seeds. This latter fact seems strange, because the plant is, or was, indigenous to this district. It used to occur quite commonly, together with the white and rose variety which I found some years ago, but, in 1910, I traversed the whole distance between Sorrento and Campanella and was unable to find a single plant. Either they have all been collected, or the intensive culture of the soil has destroyed the condition in which they flourished.

It seems strange that a German Iris should flower at Christmas, but Iris germanica hyemalis is always in blossom at this time, unless there is severe frost. Some years ago I found this plant in the old garden of the castle at Nocera. The castle has a history, not without interest. The wife of Mandred was imprisoned here by Charles of Anjou, after the Battle of Benevento, in 1266; and it is easy to imagine that many hundreds of years have passed, many seasons come and gone, since the planting of the ancient garden, bordered with Box hedges, in which I found the Iris. I planted it carefully in my garden, and had the satisfaction of finding that it was completely winter-flowering. In size and shape the flowers resemble those of Iris Kochii; I intend to place it on the market this year, but it is an open question whether it will flower in the winter everywhere.

Crocus Imperati nucerensis is a white variety of the beautiful winter-flowering Crocus. Several years ago I put C. Imperati albus in commerce, but the flowers of this variety are not pure white—when they first open; though they turn quite white after one day. The variety nucerensis was found on the Mount San Pantaleone, near Nocera; there were three large bulbs, and several small ones, in a clump. They all flower pure white—not one has reverted to the blue type. Both varieties will be found extremely useful for winter flowering.

Helleborus Kochii and H. corsicus are very early this season—earlier than I ever remember to have seen them before.

Iris Bolleana is a little, curious-looking Juno Iris with greenish-yellow flowers, marked with a dark-brown spot on the falls. It has done very well this year, but it is in no way attractive as a decorative plant. *Willy Müller, Nocera Inf., Naples.*

CLIVEDEN.

(Concluded from page 66.)

THE "LONG" GARDEN.

A PAVED walk leads from the fountain to the "Long" Garden (see fig. 40), which although only divided from the highway to Cookham by a wall, forms a charming, secluded retreat. The borders are enclosed in front by excellent Box hedges, 2 feet square, and at the back by a variety of flowering shrubs. Tall examples of topiary work occur at intervals, and many of the groups of herbaceous plants are enclosed by Lavender or Rosemary. In summer the fragrant, dark-flowered Heliotrope occurs frequently between such plants as Marigolds, Clarkias, Phloxes, Delphiniums, or Michaelmas Daisies. With such a luxuriant background, the blue colour of the Anchusa italica varieties is peculiarly effective.



FIG. 40.—THE "LONG" GARDEN AT CLIVEDEN, BUCKINGHAMSHIRE. [*Photograph by H. G. Stone.*

The Italian garden, which nestles in the wood on the lower part of the estate, is a sunken, elliptical enclosure, paved with alabaster. At the base of the retaining wall are placed broken columns and pieces of statuary. Slender Cypresses are planted at regular intervals, and at one end is a dripping well.

All the paths—and there are many with full canopies, through which the sunshine

filters, giving delightful contrasts of light and shade—seem to lead to the river, where there are a roomy boat-house and landing stage. An upward turn from the Italian garden leads past a clearing planted with purple Heathers to a small, circular plateau, in which has been set an imported transverse section of a mammoth Sequoia. On the higher parts of the woodlands judicious thinnings have been made amongst the shrubby undergrowth to let in light and air and to render the walks more pleasant during the heat of summer. Towards the Taplow end of Cliveden, past the park-like golf links, with their beautiful, spreading trees, is a small collection of Conifers, which includes good specimens of Abies grandis, Sequoia gigantea, Scots Pines (with the fiery-red bark on the upper branches, so glorious in the rays of the setting sun), and an exceptionally fine example of Cephalotaxus Fortunei, fully 20 feet high, with graceful, pendulous branchlets. Unfortunately, past neglect has impaired its symmetry, but Mr. Camm, who manages the garden so ably, has done everything possible to remedy the defect. Nearer to the house is a large, newly-made Japanese garden planted with clumps of Bamboos and big breadths of Irises. Close to the Japanese garden is an unusually well-kept maze, formed of Yew. On the opposite side of the garden, at a little distance may be seen a striking illustration of the interest Mr. Astor takes in his employees, in the splendidly-equipped club-house and reading-room, containing a good library and a full-sized billiard table for the use of the young gardeners.

Most of the vegetables required for the large establishment at Cliveden are grown in an immense kitchen garden on the other side of the river, but much fruit is grown in the "Round" garden. The arches of Apples and Pears are exceptionally interesting; the latter on account of the unusually long fruiting growths. Mr. Camm practices common-sense methods of pruning, and rightly considers that the first duty of fruit trees is to bear fruit, their shapely appearance being a secondary consideration. Among the pergolas is one which was furnished last summer with many varieties of Gourds.



[*Photograph by H. G. Stone.*

FIG. 41.—SCENE IN THE PLEASURE GROUNDS AT CLIVEDEN.

THE GLASSHOUSES.

Large quantities of forced fruit and flowers are required, and the glass department is very important. Carnations are grown splendidly and in great numbers: the very many plants of Tree varieties and the "Malmaisons" were in the best of health. These, with the aid of forced bulbs and such other plants as Tuberoses, Cyclamens, Poinsettias, Coleus thyrsoideus, and an especially good batch of Plumbago rosea, furnish plenty of flowers throughout the winter and early spring. Liliums are also extensively grown, and one house contains a great number of Hippeastrums. Orchids are not grown in great numbers, but the several houses devoted to Calanthes, Dendrobiums, and Cattleyas contain vigorous plants. Except for a Fig house and a couple of Peach houses, all the fruit forcing is done in another enclosure, where there are modern houses. The vineries furnish splendid bunches of Lady Downe's, Muscat of Alexandria, Madresfield Court, and Black Alicante Grapes. At the time of my visit the indoor Peaches were over, but the trees of Royal George, Alexander Noblesse, or of Rivers's Early Nectarine, to name but a few, were showing plenty of flower-buds, and promised abundant crops. Morello Cherries and late Peaches growing against the walls of this garden still bore a good quantity of useful fruit. This garden is also used for growing such plants as Carnations, Delphiniums, Roses, and Violets, for furnishing cut blooms.

The long Orangery near to the house is not used now as a conservatory, but it still contains some of the large Orange trees without which no garden of any pretensions was formerly considered to be complete. A large specimen of Monstera deliciosa was also fruiting well, and, besides many fine plants of Campanula pyramidalis, Agapanthus, and Clivias, there were two very large plants of Echium fruticatum, which furnished the huge spikes of flowers exhibited by Mr. Camm at one of the meetings of the R.H.S. *A. C. Bari*

THE ROSARY.

CULTURAL HINTS FOR FEBRUARY.

Owing to the mild winter all kinds of Roses are growing as though it were April. It will be best to leave the plants alone, for matters generally right themselves by the time the season for pruning arrives. These young shoots are bound to be damaged when cold weather sets in, but it will not be a very serious matter, as there are always plenty of dormant buds to provide suitable growth later. In the case of ramblers, badly injured growths should be cut clean out. It frequently happens, however, that, although they may hang their heads when frosted, shoots of ramblers recover and blossom as though nothing had happened. The soil has been so excessively wet during the past three weeks that planting has been almost an impossibility. Those who had stored a good heap of dry compost consisting of equal parts of fine loam, leafmould and burnt garden refuse in an airy shed have found the great value of this material when planting, for it is always an advantage to sprinkle a good shovelful of prepared compost amongst the roots of Roses, and especially when the soil is very moist. The materials fill in the spaces between the smaller roots and enable the plant to become established quickly. Provided the condition of the ground be suitable for making the plants firm at the roots the beds may be completed at the first opportunity, but before placing the top layer of soil on the roots, it is well to sprinkle a handful of bonemeal over the surface. If the beds have been dug deeply, and dressed with plenty of rich manure, strong growth should be assured by the help of the bonemeal.

Where planting cannot be proceeded with owing to the water-logged condition of the soil, the Roses should be procured and placed temporarily in a small trench, covering the roots well with soil. They may be allowed to remain in the trenches until a suitable opportunity occurs for planting them permanently, even though several weeks elapse. It is not wise to defer sending the orders to the nurserymen, for there is a danger that certain varieties may be unobtainable later. Roses planted temporarily may be kept in a dormant condition of growth by replanting them every three or four weeks in other trenches. If this practice is adopted, they will be much more successful when finally transplanted than if they were not disturbed. The Wichuraiana varieties are splendid subjects for planting by the sides of lakes and in dells, where they may be trained over mounds made of tree-stumps. Prepare suitable stations for the plants by enriching the ground or adding fresh compost as may be necessary. Open spaces in woods may be planted with groups of Roses that have a shrub-like habit such as Conrad F. Meyer, and its white sport Nova Zembla. Such positions are also suitable for the Sweet and Hybrid Briars, including Una, Juliet and Beauté de Lyon. The beautiful colour of the last-named variety appeals to all, but the variety is not suited for the Rose garden proper, as it very seldom blooms in autumn, and Roses of that type should be regarded more as flowering shrubs.

Hedges formed of Roses may be pruned now, cutting out the exhausted shoots. Gaps should be filled by training in suitable growths, or, if necessary, planting fresh Roses. Manure should be dug in the soil on both sides of the hedge.

Roses that have been heavily dressed with animal manures should be sprinkled with lime. Slaked lime is the best form to use, and it should be applied at the rate of about 6 ounces to the square yard. The lime will not only be beneficial to the roots, but will assist in keeping down fungous pests. An excellent manure to apply to Roses at this season is the following :—Phosphate of lime 12 parts, nitrate of potash 10 parts, sulphate of magnesia 2 parts, sulphate of iron 1 part, and sulphate of lime 8 parts. It should be applied at the rate of 4 ounces to the square yard, and should supplement the annual dressing of decayed farmyard manure. Night-soil is one of the best fertilisers for Roses. It should be collected and stored in earthen pits for one year. When dug out it should be mixed with burnt garden refuse, and spread over the beds during the winter months to be forked in just below the surface.

Red rust and black spot diseases are great pests of Roses, and there does not appear to be an efficient remedy for them. Where these diseases have proved troublesome the surface soil should be removed to a depth of about 2 in. and burned. The prunings also should be burned, and the plants sprayed with Bordeaux mixture. The spraying should be continued throughout the spring and summer at intervals.

Plants that are becoming exhausted may often be rejuvenated by transplanting them, and it is not too late to undertake this work. When the plants are dug up the roots should be examined, and any suckers or "eyes" that will develop into suckers should be destroyed. When replanting, place a shovelful or two of good compost about the roots, adding a handful of bonemeal to each plant.

Standard and dwarf Briars that were budded last summer may be cut back, the standards to within 5 or 6 inches of the buds, and the dwarfs almost close up to the buds. It is advisable to mark the positions of dwarf plants with bamboo canes. The soil between the rows should be dug as soon as the conditions are favourable.

Roses in pots intended for exhibiting at the early shows should be trained. Fasten a piece of string just beneath the rim of the pot, and draw the shoots into shape, securing the branches to the string by raffia. If this work is undertaken now the training will be facilitated when the sticks are inserted later.

Roses trained on walls between Peaches and Nectarines are very useful for supplying early blooms. I have seen Roses grown under a lean-to roof, but without doors, so that an abundance of air circulated amongst the plants. The plants were in bloom by the end of March; they were very sparingly pruned, and produced useful flower-buds such as those that are arriving now from the Riviera district. *Experience.*

AMERICAN NOTES.

THE NATIONAL FLOWER SHOW.

On the 5th of April next the third of a series of National Flower Shows organised by the Society of American Florists will take place, and it bids fair to surpass either of its predecessors. The previous shows were held respectively in Boston and Chicago; the present one is to take place in New York. A very useful prize list has been prepared; money awards range from $500 downwards, and there are numerous cups and medals.

The show will partake somewhat of an international character, as several commercial firms, and possibly also some amateurs, are coming from England to compete. Mr. R. F. Felton, for instance, is planning an extended visit to New York, and we hope to obtain from him many valuable points on the subject of arrangement, in which particular most American florists fall rather short. However, they are already improving in this respect; each year some progress is observable.



[Photograph by H. G. Stone.

Fig. 42.—Archway of Pears in the Gardens at Cliveden.

(See p. 88.)

We were pleased to welcome in 1911 a strong delegation of British florists on the occasion of the Boston Show, and hope that the number will be greatly augmented in New York this year.

Forcing Roses.

Among the new forcing Roses of recent introduction, the variety Sunburst is gaining popularity, though it is not yet grown anything like so generally as Mrs. Aaron Ward or Lady Hillingdon, which are at present the two most popular yellow Roses. Melody is also giving satisfaction. It is but a few years ago that the old Perle des Jardins was the only yellow forcing Rose, and it did badly in most places. Now yellow Roses are a feature in every market, some growers raising 15,000 to 30,000 of them.

Several novelties are being introduced this season : among others, Mrs. Charles Russell (see fig. on p. 61 in the issue for Jan. 25), raised by G. Alexander Montgomery, of the Waban Rose Conservatories, Natick, Mass. This will run American Beauty remarkably close; it is of a better colour, equally vigorous, and far more floriferous. Mrs. George Shawyer is also meeting with an

ager reception; blooms have been shown at several exhibitions on stems 48 inches to 60 inches long during the present winter, and the colour is specially fine. Milady, a Rose of a somewhat deeper red than Richmond, is a third Rose which has a high place in public favour.

Of the older varieties, Richmond still stands alone in point of colour. I saw some flowers on stems 6 feet high at Christmas, grown in New Hampshire by Messrs. M'Alpine Bros. Such flowers realise from $6 to $9 per dozen wholesale—they are worth about the same as the best flowers of American Beauty. Killarney, White Killarney, and several so-called improvements and sports of these two sorts are still the best of their respective colours. Bride and Bridesmaid are now seldom seen, and are almost unsaleable in competition with the Killarneys. Antoine Rivoire, rechristened and sold freely as Mrs. Taft, has proved a well-growing Rose, but it does not succeed perfectly in mid-winter. *W. A. Craig, North Easton, Mass., U.S.A.*

FLORISTS' FLOWERS.

COLLERETTE DAHLIAS.

Like several other classes of Dahlias, the Collerette originated on the Continent, and found its way to England two or three years ago. It has been grown largely by our leading Dahlia growers since, and numbers of new varieties have been raised. This is a comparatively easy process, as these Dahlias seed freely, and a good proportion of the seedlings produce flowers of fair quality. The Collerette is a glorified single Dahlia. The outer circle of disc florets have become petaloid, and are frequently of a different colour from that of the ray florets. Provided the flowers are kept moderate in size and distinct in colouring, there will be a place for them for decorative purposes, more especially if what is claimed for them works out in practice—that they stand much longer when cut than the ordinary singles. There is no doubt about the free-blooming qualities of the new race, and this will commend them for garden decoration. A small collection of them ought to be tried in every up-to-date garden, as a trial is by far the most satisfactory way of deciding the merits of any new plant. The following notes made last season when inspecting a large collection indicate the colour range and possibilities of the flower:—The plants ranged from 3 to 4 feet in height by about 2½ feet in diameter. What might be termed typical flowers average 3½ inches in diameter, and they were most freely produced on long, wiry stems 14 to 18 inches in length. The form of the flower varies in different varieties from pointed petals (star-shaped) to quite round flowers. The former are the more artistic and lend themselves best for use in a cut state. The varieties noted are as follow:—

Goldstern.—Pure rich lemon-yellow with yellow collar, remarkably free and good in every way. Over two dozen open flowers and over 100 buds on one plant.

Henri Farman.—Rosy-scarlet with lemon collar, very free blooming, long stems.

Antwerpia.—Scarlet and yellow with yellow collar.

Countess Icy Hardegg.—Rose-pink and white with white collar, extra free blooming and perfect habit.

Balmoral.—Purplish-carmine with pure white collar, most distinct.

Queen Bess.—Rich buff-yellow with clear yellow collar. Single plants gave 20 expanded flowers and had over 80 buds in different stages.

Diadem.—Soft pink with white collar, rather taller than most, but grand and free.

Maurice Rivoire.—Deep red or crimson with white collar. This variety and Diadem have received many awards.

Vilmorin-Andrieux.—More striking than beautiful, violet and white with white collar.

Leitstern.—Rich dark maroon with white collar, star-shaped flowers produced freely or slightly dwarfer plants.

Mme. E. Poisier.—Violet-mauve with white collar. One of the dwarfer forms.

The Czar.—Rose-coloured flowers tipped white and with white collar, perfect habit, flowers in abundance. *Traveller.*

WATERING PERPETUAL-FLOWERING CARNATIONS IN WINTER.

Everyone thinks that he or she understands the watering of plants, from the old lady who waters the Pelargonium in her cottage window with a tea-pot to the man controlling a hose-pipe in a modern Carnation house covering a quarter of an acre or more. There is no rule for watering beyond this. Water according to the weather and season of the year. The successful cultivators are those who can do this. They do it instinctively.

Few growers of Carnations realise the large amount of moisture given off by the foliage of the plants in bright weather. It is owing to this fact that the plants grow so little during periods of excessively bright sunshine. In the winter things are different, and transpiration is very low. The air also does not extract so much moisture from the soil and pots, consequently the supply that is necessary at this season is extremely small.

To keep the plants perpetually wet is wrong. It is equally wrong to keep them perpetually dry, or to run from extremes of excessive moisture to excessive drought. It is the grower who maintains plants between these extremes who obtains the best results. The root action is thus kept healthy and vigorous, and without perfect root action failure is inevitable. *M. C. A.*



Fig. 43.—Primula Allionii growing on the Maritime Alps.

SWEET PEAS.

At the annual general meeting of the National Sweet Pea Society, as reported in *Gardeners' Chronicle*, October 26, 1912, Mr. T. A. Weston asked whether the Sweet Pea had been crossed with perennial Peas. In 1910 I pollinated Sweet Pea Hon. Mrs. Kenyon with pollen from the so-called Lathyrus luteus aureus, but did not sow the seeds resulting therefrom until December, 1911. This being a late district, the plants did not flower before the winter. They bloomed in November, 1912, and all the flowers were bluish-purple in colour and of the grandiflora type. I again pollinated some of them with pollen from L. pubescens, and will write further should anything interesting result. Can any reader inform me where I can obtain seeds of L. tingitanus, referred to by Mr. Weston? *Gilbert Errey, Hazeldene, Victoria, Australia.*

PRIMULA ALLIONII.

This small Primula (see fig. 43) is one of the rarest of the European representatives of the family, its station being confined to some cliffs at a fairly low elevation in the Maritime Alps of north Italy. From various accounts and information forwarded by a local botanist I expected to find the plants mostly in caves and grottos of the limestone cliffs. On the cliffs which I visited some of the most luxuriant rosettes and the finest tufts, from 1 foot to 2 feet across, were in the caves, but a large number of plants, with small and close rosettes, were growing on the perpendicular cliff-face, exposed to the full rays of the mid-day sun. Apparently it is these fully-exposed, hard rosettes which largely propagate their species, for the plump, round seed-pods, still unripe at the end of August, were fairly plentiful on the exposed plants, but seemed to be borne only scantily on the cave-dwellers.

The rosettes of Primula Allionii vary from 1 to 3 inches across, the leaves are succulent from ½ to 1 inch long, spoon-shaped, usually entire, but occasionally slightly toothed, deep green above, but paler on the under surface, covered densely with glandular hairs, which exude a sticky substance and give the plant a greyish-green appearance. The old leaves are not cast off, but remain and clothe the stems. The flowers, which appear on such short stalks that at first glance they seem to be sessile, open successionally throughout the spring. They are pinky lilac with a large, white eye, and vary in size and shape, being usually rather more, or sometimes rather less, than ½ an inch in diameter; some have round, overlapping petal lobes with a slight indentation, others have the petal lobes separated with a deeper notch, giving the flowers a very starry design. The corolla tube is white, nearly ½ an inch long, and, like the calyx, bears glandular hairs.

Armed with a coal hammer and cold chisel, I went to collect this Primula. A few accommodating plants may be levered out by the aid of a collector's strong trowel, but the majority are in minute cracks with roots delving deeply into the hard limestone without any soil, and, standing on the cliff face, bathed in perspiration, with the scorching sun overhead, I soon understood why the plants have developed such a copious supply of glutinous and protecting hairs. The limestone cliffs on which this Primula grows are of a peculiar reddish colour, and Mr. Stephenson, of the Royal College of Science, Dublin, tells me that pieces which I brought back give the following analysis:—

"Nearly 70 per cent. of carbonate, of which only a little is magnesia, the bulk being calcium carbonate. It also contains a fair amount of silica, practically the whole of which is uncombined sand, also a trace of iron."

Although its native rock shows such a large proportion of calcium carbonate, it is interesting to see how a plant direct from its natural habitat has apparently taken to a pure granite moraine; it opened its first flower on January 7.

Plants are adaptable beings, and the more we experiment the more we learn. It is not always a fact that, because a plant is limited to granite, it is a lime-hater, nor because it is limited to limestone in nature that the plant cannot do without it in cultivation. An interesting limestone moraine in Ireland shows some plants doing well which have been stated to be positive lime haters. *C. F. Ball*

The Week's Work.

FRUITS UNDER GLASS.

By JAMES WHYTOCK, Gardener to the Duke of BUCCLEUCH, Dalkeith Palace, Midlothian.

SUCCESSIONAL VINES.—It is a suitable time to commence the forcing of successional vines and Muscat varieties. By the time the latter have reached the flowering stage, the weather conditions will be more favourable for the maintenance of a minimum temperature of 75°. Muscat Grapes are best grown in a house by themselves, but Gros Colman, which requires a similar treatment, may, if desired, be planted with them. Preparations for forcing having been made by washing the interior of the vinery thoroughly, cleansing the vines, and taking measures to destroy insect pests, the condition of the soil should be ascertained. In most districts it is best to plant Muscat vines in inside borders, as, when grown outside, the borders require to be covered with a layer, 2 feet deep, of leaves mixed with a small amount of stable litter to keep the soil warm. It is now generally recognised that, provided the soil is of suitable character, the border need not be very extensive, but a restricted border needs very careful attention in the matter of watering. If the soil is fairly moist, water will not be required for the present, and watering must be done with great care until the vines have set their crop. The instructions given in a former Calendar on the closing and starting of early vineries should be followed in the case of the successional vines.

STRAWBERRIES.—The earliest plants have set their fruits, and the temperature may be raised to 65° or 70°. Place the plants near to the roof-glass, and, if they are growing in 6-inch pots, do not stand them in saucers, as excessive damp may result in mildew. Let the air circulate freely, and syringe the plants, on bright days, in the morning and again early in the afternoon, when the temperature is about 15° above the mean. Water the roots with very great care; they should neither be too wet nor excessively dry. At every alternate watering use diluted liquid manure, and continue this treatment until the fruits change colour, when clear water only should be applied. At that stage admit air on every possible occasion to promote a good flavour in the berries. Successional batches should be brought into heat as advised in a former Calendar.

MELONS.—If the earliest Melons are grown on hotbeds in frames forcing may be commenced this month. Get the frame in readiness, and make a hotbed, which, with linings, will provide a temperature of 70° and a bottom heat of 85° to 90°. Sow two seeds in each 4-inch pot, and when it can be determined which is the better plant, remove the inferior one. Water the seedlings with extreme care, and, when they have grown 6 inches high, plant them out in the frame at 2 feet apart on a ridge of soil 2 feet wide and 1 foot deep. The compost should consist of a rich loam mixed with mortar rubble. Place a 2-inch layer of soil over the rest of the bed, and do not water the plants for some time after they are planted, as the moisture in the soil and beds will suffice until the plants have made considerable growth. Ventilate the frame as occasion requires, remembering that a close, moist atmosphere, with an excess of heat, will be very injurious. During times of sunshine, when air is admitted, the temperature may reach 85°. Early Melons in houses are making strong growth. These plants must not be over-watered; moisture should never be applied unless the soil is quite dry, when the roots should receive a thorough soaking. On bright days the foliage may be damped very lightly at closing time, but guard against excessive syringing. When applying water to the roots do not wet the stems of the plants. The temperature of the house should be maintained at 70° to 75°, and the atmosphere kept moist by damping the paths and walls. Plants raised from seeds sown at the beginning of January should be grown near to the roof-glass. Let the bed for this batch be prepared in the Melon house, and set the plants in the bed straight from the seed pots.

THE FLOWER GARDEN.

By EDWARD HARRISS, Gardener to Lady WANTAGE, Lockinge, Berkshire.

THE WOODLAND GARDEN. — Woodlands planted as wild gardens need considerable attention at this season. If any alterations are contemplated the work should be completed at the earliest opportunity, as wild gardens are most beautiful in springtime, and the effect will be marred if ground operations are in progress then. There is usually a spring, brook, or pool in these unconventional parts of the garden, and water in any form gives additional beauty to the scenery. The plants that are usually associated with water are mostly strong-growing subjects, which need to be thinned or pruned annually to produce the best effects. In making plantations of trees, shrubs, or herbaceous plants on the margins of the water, select suitable subjects and do not plant them too thick or they will in time hide the water from view. Senecio Clivorum should be included in the list of herbaceous plants. Certain of the plants which have been forced for decorative purposes in the conservatory or greenhouse may be afterwards utilised in the wild garden; bulbs, especially the late-flowering kinds, may be planted in open spaces. Suitable shrubs will be found in Azalea mollis, Deutzia, Lilac, Rhododendron, Viburnum, Wistaria, Staphylea, and Spiræas of sorts. Climbing Roses may be allowed to ramble over old tree trunks or rustic summer houses. The garden may also include Honeysuckles, Clematis, Cornus, Weigela, Olearia Haastii, and Golden Privet, which gives a splendid effect in winter, especially when massed in large groups. For planting beneath, or in the shade of trees, select Hypericum (St. John's Wort), Vinca (Periwinkle), Ruscus aculeatus (Butchers' Broom), Berberis Aquifolium (Mahonia), Box, and Ivy. Colonies of Ferns may be formed in suitable situations. When once established, the Ferns will give very little trouble, needing only an annual trimming in winter. Primroses should be planted extensively, for they thrive in almost any soil or situation. Hellebores grow well in partially-shaded places. When these plants have become established they need little attention beyond top-dressing the roots occasionally with decayed manure, but the stations for them should be dug deeply and the soil enriched with plenty of manure. Certain of the commoner herbaceous plants may be utilised in the more open spaces near to the paths. Of these I may enumerate Helianthus, Pyrethrum uliginosum, Chrysanthemum maximum, Doronicum, Erigeron, Lythrum, Funkia, Polygonum, and Epilobium. The Foxglove and Honesty will both provide flowers in springtime, whilst Physalis Franchetii will give pleasing effects in the autumn and winter. The paths leading through woodland scenery should, wherever it is practicable, be formed in the grass. It must be remembered that grass paths are often very wet, especially the parts shaded by trees, therefore efficient drainage must be provided whenever new ones are formed.

THE HARDY FRUIT GARDEN.

By B. GOODACRE, Gardener to Sir ERNEST CASSEL, Moulton Paddocks, Newmarket.

PEARS.—The work of pruning, cleansing and training Pear trees may be continued whilst the weather remains favourable. Standard and bush-trained trees should only be pruned by an experienced workman, for harm may easily be done by using the knife too freely, especially in the case of trees with much rank growth, as severe pruning will only result in another crop of gross shoots the following season. Such trees may need root-pruning, but the operator must be guided in this matter by the condition of the roots, which can only be ascertained by exposing them. It is neither desirable nor profitable to cut back the leaders of strong-growing specimens. Trees that have been attended to in the matter of lifting or root-pruning should be well furnished with fruit buds, and benefit will be derived by cutting away young, sappy branches. Wall-trees that were summer-pruned have, in most cases, made secondary growths which should be cut away, shortening the original growth to 2 to 3 inches; the weaker shoots should be pruned to one bud. The following list includes 20 good varieties of Pears in their order of ripening:—Doyenne d'Eté, Jargonelle, Williams' Bon Chrêtien, Beurré d'Amanlis, Marguerite Marillat, Triomphe de Vienne, Beurré Hardy, Comte de Lamy, Conseiller de la Cour, Louise Bonne of Jersey, Marie Louise, Conference, Doyenné du Comice, Thompson's, Glou Morceau, Le Lectier, Knight's Monarch, Winter Nelis, Beurré Rance, and Bergamotte Esperen.

PLUMS. — My remarks in the Calendar for February 1 on Apricots also apply, in most cases, to Plums. It is not advisable in the case of young wall-trees to cut back the leaders, as this will cause shoots to develop at the top part, whereas, if the whole branch is trained in fruit spurs will form along its entire length. Orchard trees should not be overcrowded with growth, as the light must reach the shoots and air circulate freely amongst the trees for the wood to become ripened. Although the Plum as a wall plant will often succeed in at least three aspects, it does best on east and west walls. The following varieties in their order of ripening may be recommended:—Czar, Early Transparent Gage, De Montford, Denniston's Superb, McLaughlin's Gage, Jefferson, Transparent Gage, Kirkes, Victoria, Monarch, Coe's Golden Drop and Grand Duke.

SWEET CHERRIES.—The Sweet Cherry, like the Plum, fruits on both spurs and shoots of the previous years. Both fruits need very similar pruning, but in the case of the Cherry the spurs should be cut a little shorter. The Morello Cherry fruits on the young shoots, and the trees are best-trained fan shape. Arrange the main branches thinly and train in the young growths to their full length. At Moulton Paddocks the Morello Cherry does well as a standard, the trees producing good crops of clear, bright fruit. These trees are pruned but very little; only the old fruiting wood is removed, and any growths that cross each other, or that grow towards the centre of the tree. The final work in the case of wall trees consists of an examination of the old ties and fastenings with a view to removing any that are too tight or are not absolutely needed. The nail securing the shred is often driven into the wall too near to the branch, with the result that the bark becomes permanently scarred.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir TREVOR LAWRENCE, Bart., Burford, Dorking.

MILTONIA. — The Brazilian Miltonias should be examined to ascertain if any of the plants are in need of increased pot-room, for the present is the best time to repot them. M. Clowesii, M. Regnellii, M. Russelliana, M. Lamarckiana, M. candida and its variety grandiflora, are all strong-growing subjects, and are best grown in well-drained pots, filled with a mixture of equal parts of Osmunda and A1 fibre. Both materials should be cut into moderately-fine portions and well mixed together. In potting, keep each plant well above the rim of the pot, and allow the base of the pseudo-bulbs to only just touch the compost, so that the growths now pushing forth will be quite free from anything that might cause them to rot. Plants that do not require increased root-room, but are growing in close, sour compost, should have the old soil carefully removed from the roots, and be resurfaced with fresh material. Certain plants of the white-lipped M. cuneata are developing flower-spikes, and these should not be disturbed till after the flowers fade. The dwarfer-growing M. spectabilis, M. Moreliana, M. Bluntii, M. B. var. Lubbersiana, M. Binotii, M. bicolor, M. virginalis, and M. Peetersiana grow best in shallow pans. The young growths extend themselves rapidly in every direction, hence, the plants require considerable rooting space. Specimens that are bare in the centres may be broken up to allow all decayed and useless pseudo-bulbs to be cut away, and the healthy portions made up afresh. Half-fill the pans with small crocks for drainage, and employ the compost recommended above. Portions which have but few roots should be pegged to the compost, as the plants will not succeed if they are the least loose in the soil. All these Miltonias may be grown in a rather shady part of the intermediate house, and should be stood near to the roof-glass. In strong light or direct sunshine the foliage becomes more yellow than is desirable. The plants should be kept fairly moist at the roots at all times; they require a little extra water when producing their flower-spikes. An important detail in the

successful cultivation of these Miltonias is to see that the numerous small roots now appearing are in no way injured by insect pests, which may be trapped on pieces of vegetables or fruit, such as Potato, Carrot or Apple. Inspect the traps soon after the plants have been watered. The rare M. Schröderiana, a distinct and handsome species, a native of Costa Rica, is in full growth, and the roots should be kept moist. The Columbian M. vexillaria is also growing freely, and should be supplied abundantly with water until the shoots are completed. If the surface moss has died owing to its becoming dried up in the resting season, it should be replaced by living heads. In dull, moist weather extra ventilation should be afforded the plants, if this can be done without affecting the welfare of other subjects in the same house, as plenty of fresh air will, to some extent, prevent the young leaves from becoming spotted. Examine the plants occasionally with a view to releasing any of the leaves that have become firmly clasped together. They may be released by passing the handle of a small budding knife, or a thin piece of smooth wood, between them. Certain growers repot the whole stock of their M. vexillaria at this season, and in some cases with good results; but I find that plants potted late in the summer thrive better.

Phaius.—Several varieties of Phaius, including P. grandifolius, P. Sanderianus, P. Blumei, P. assamicus, P. Wallichii, P. bicolor, the hybrids P. Cooksonii, P. amabile, also the new Phaio-Calanthe Colmanii, are developing their flower-spikes, and require plenty of moisture at the roots, and occasional applications of weak liquid manure from the cow-sheds.

Shading.—Fix the blinds to the Odontoglossum or cool house, as the sun is gaining power and may be too strong for the plants during the middle of the day, especially where the houses have a south-east or south aspect.

THE KITCHEN GARDEN.

By John Dunn, Foreman, Royal Gardens, Windsor.

Brussels Sprouts.—A sowing of this vegetable should be made to furnish plants for cropping in September. Sow the seeds in boxes and germinate them in gentle heat. The seedlings will soon make their appearance, when they should be removed to a cold pit. Prick them off in beds as soon as they are large enough to handle, putting them 4 inches apart. The pit should be kept close for a few days, but when growth commences air should be admitted to prevent the plants from becoming drawn. After a time the lights should be removed gradually until the plants are ready to be put out early in May. Ideal is one of the best varieties for present sowing.

Cauliflowers. — Make a sowing of Dean's Early Snowball or Magnum Bonum, these being reliable sorts, to follow the plants wintered in cold pits. The seedlings from this sowing should be potted up as soon as they are large enough to handle, and placed near to the roof glass in a cold pit. The plants should receive special attention, as they will be needed to prevent a break in the supply when the autumn-sown plants are over. A sowing of Early London and Walcheren should also be made to furnish plants for a succession.

Onions.—If the ground intended for this crop was trenched and manured in the autumn, the bed will only require forking lightly, and making as fine and level as possible. Nothing further should be done until the soil is dry enough to crumble under the foot, when the surface should be trodden firm. Nothing is more detrimental to land intended for the sowing of small seeds than to trample it whilst it is wet; it is far better to defer the sowing until the ground becomes dry, even if it entails a month's delay. When the surface has been trodden and raked until the soil is quite fine, drills may be drawn 16 inches apart and 1 inch deep. Sow the seeds thinly, and cover them with care. The surface may then be lightly trodden and raked with a wooden rake, taking care not to disturb the seeds. As soon as the young plants are through the ground, the Dutch hoe should be used freely between the rows to destroy seedling weeds. If the seeds are sown sparingly, very little thinning will be necessary in the case of the main crop, as bulbs of a medium size are more serviceable in the kitchen than very large ones. A light dusting of soot should be applied on frequent occasions, choosing showery weather. Autumn-sown Onions should be planted as early in February as the conditions permit; this is an important crop, as the bulbs are ready at a time when good Onions are scarce. The ground should be as rich as possible, and may be prepared in the same way as for Spring Onions. Plant in rows at 18 inches apart, allowing 9 inches between the plants in the row: the bulbs grow to a much larger size than those sown in the spring. When the plants are growing freely they may be fed frequently with liquid manure from the farmyard and with light sprinklings of artificial manure.

Turnips.—Make a small sowing of Turnips on a sheltered border as soon as the soil is in a fit condition. As there will be a danger of the plants running to seed, only a small quantity of seed should be sown at one time. Two more sowings may be made at intervals of eight days. When the seedlings are through the ground, dust them with soot or wood ashes on frequent occasions, and stir the surface of the bed lightly with the Dutch hoe. Early Milan is a good variety for present sowing. The rows should be 9 inches apart, and the plants in the rows thinned to 6 inches asunder as soon as they are large enough to handle.

PLANTS UNDER GLASS.

By F. Jennings, Gardener to the Duke of Devonshire, Chatsworth, Derbyshire.

Begonia Rex.—These ornamental-leaved Begonias may be propagated from leaves in the same manner as Saintpaulias.

Allamanda and Clerodendron.—Plants of Allamanda and Clerodendron Balfouri that have been resting should be started into growth in a warm house. Syringe them freely, and, as soon as the leaves appear, immerse the pots in liquid manure made from cow dung, until the soil is soaked thoroughly. Remove the plants afterwards to where they will be required to flower.

Tree Carnations. — Plants raised from cuttings inserted in boxes during the second week in January, should be ready for potting into thumb pots. Those that were potted previously in these small receptacles should be stopped if the operation has not been done already. Shorten the main stems to within 3 or 4 inches, using a sharp knife. Plants that have been stopped some time previously are breaking into fresh growth, and those that are well-rooted should be shifted into 4-inch pots. Established plants should be fed regularly with an artificial manure. If these Carnations are grown in benches the soil should be loosened carefully at the surface, and receive a dressing of Clay's fertiliser and soot in equal parts. Plants that are entering their second season will require liberal supplies of water at the roots as the days lengthen. Keep a sharp look-out for red spider and aphis, and grow the plants in a temperature of 55° to 60°.

Eucharis.—Plants of Eucharis grandiflora that have finished flowering, and are starting afresh into growth, should be examined thoroughly for the presence of mealy bug. An excellent way of freeing Eucharis from this pest is to syringe the plants with rain-water, to which ordinary paraffin is added at the rate of an eggcupful, to each bucket of water. One operator should keep the mixture well stirred whilst a second does the syringing. It is best to place the plants on their sides, so that the undersurfaces of the leaves may be well syringed, and this will prevent the soil from being wetted. The plants should be allowed to drain afterwards. The roots may be fed with liquid manure from the farmyard, replacing this occasionally by a dressing of soot and artificial manure. Keep the atmosphere of the house damp, and let the temperature at night-time be 65° to 70°. Syringe the plants with clear water both mornings and afternoons.

Pot Roses.—Plants on the point of flowering should be fed liberally every day with liquid manure from the cow sheds, which should also be syringed on the bare spaces between the pots both mornings and afternoons, using it very weak for this purpose. Ventilate the house with great care, as cold draughts must be prevented. If mildew is detected on the foliage, either smear the hot-water pipes with flowers of sulphur, late in the afternoon, and keep the house closed, or syringe the plants late in the day with some liquid form of sulphur, such as potassium sulphide. When sulphur is used, the top ventilator should be opened next morning, as there is a danger in bright sunshine of the foliage becoming scalded. Guard against maggots in the foliage, as these pests will completely spoil the buds.

Zonal Pelargoniums. — Specimen plants required for summer flowering should be ready for shifting into 6 or 8½-inch pots. The compost may consist of good loam, leaf-mould, and sand, mixing an 8½-inch potful of fine bones, and the same quantity of soot, to each barrow-load of the mixture. Pot firmly, soak the roots with water, and stand the plants in a warm house or frame. When the shoots have started to grow freely, stop the longest growth. Any subsequent stopping should be done according to the season at which the plants are required to flower. Systematic feeding is an important detail in the cultivation of Zonal Pelargoniums, therefore, as soon as the pots are filled with roots the latter should receive a liberal supply of either liquid or artificial manure.

THE FRENCH GARDEN.

By Paul Aquatias.

Hot-beds.—The wet weather has delayed the work of making the hotbeds, and every opportunity should be taken to complete them at an early date. The use of mats for protection has been unnecessary so far. Though it is difficult to lay down a hard-and-fast rule, it is fairly safe to say that while fermentation is proceeding smoothly a little frost will cause no harm, especially when the crops are not far advanced. The protection of the mats is more necessary from the end of February until the Lettuces are marketed, as young, new leaves are most liable to a check. If the paths between the frames and cloches are well filled with dry manure, it will help to ward off frost, and also to prevent, to a great extent, moisture from collecting in the beds. On fine, warm days, dead or decayed leaves should be removed from the Lettuces. This work is very monotonous, but it is very important if fine produce is required.

Unheated Frames.—Place dry manure or other strawy material in the paths between the frames to stop gaps underneath the frames and facilitate access to the latter in any weather. Ventilation may be afforded at day time when Lettuce "White Passion" is grown.

Open-air Crops.—The ground allotted to the earliest crops should be prepared without delay. Such catch crops as Spinach, Radish, and Cabbage Lettuces may be grown conjointly with the other crops, but when a good trade is done in one or all of these vegetables and there is plenty of ground available, they should be grown by themselves, as a bigger quantity may be obtained in an equivalent area and the sowing or planting may be done earlier. On light, clean ground sow broadcast, but in heavy, weedy soil the drilling in of the seeds will greatly facilitate future cleansing operations. It is not too early to plant Lettuce "White Passion" out of doors in a sheltered position. Select strong, large plants and set them at 9 or 10 inches apart. The first sowings of Spinach "Monstrous of Viroflay" and Radish "National" or "Sparkler" may be made. Hoe the spring Cabbages planted last autumn and apply a dressing of nitrate of soda at the rate of 2 ounces per square yard.

Nursery Beds.—Make the first sowing of Cauliflowers in a hot-bed 6 or 8 inches thick. Sow thickly with a view to pricking off the young seedlings later. Afford ventilation as soon as the seeds have germinated and subsequently on every possible occasion. The frames may be filled with dry compost to prevent damping in the plants. The best varieties are: Demi-Dur de Paris, Driancourt, and All the Year Round; Demi-Dur furnishes the earliest and smallest inflorescences and is a variety suited to heavy rather than light ground. Where salading is in demand seeds of Cabbage Lettuce "All the Year Round" or "Blonde Paresseuse," also Cos Lettuce "Paris White" or "Versaillaise," may be sown thinly in a bed prepared similarly to that for Cauliflowers.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* EDITORS, 41, Wellington Street, Covent Garden, London. *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

Special Notice to Correspondents.—*The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

Illustrations.—*The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable plants, flowers, trees, &c., but they cannot be responsible for loss or injury.*

Local News.—*Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.*

Newspapers.—*Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see.*

APPOINTMENTS.

MONDAY, FEBRUARY 10—
United Hort. Ben. & Prov. Soc. meet.

TUESDAY, FEBRUARY 11—
Roy. Hort. Soc Ann. m et. Roy. Inst. meet. (Lecture by Prof. W. Bateson.)

WEDNESDAY, FEBRUARY 12—
Croydon and Dist. Hort. Ann. Dinner.

FRIDAY, FEBRUARY 14—
Roy. Inst. meet. (Lecture by Prof. Andrew Gray.)
Finchley Chrys. Soc. Ann. Meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich—39·0.

ACTUAL TEMPERATURES:—
LONDON.—*Wednesday, February 5* (6 P.M.) Max. 49°; Min. 46°.
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—*Thursday, February 6* (10 A.M.): Bar. 29·9°; Temp. 50°; *Weather*—Dull.
PROVINCES.—*Wednesday, February 5:* Max. 47° Dover; Min. 36° Aberdeen.

SALES FOR THE ENSUING WEEK.

MONDAY AND WEDNESDAY—
Rose Trees, Perennials, Fruit Trees, Shrubs, &c, at 12.30; at Stevens's Auction Rooms, 38. King Street, Covent Garden.

MONDAY AND FRIDAY—
Perennials and Herbaceous Plants, Hardy Bulbs, &c., at 12; Roses and Fruit Trees, at 1.30; at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

WEDNESDAY—
Japanese Lilies and other Hardy Bulbs, Herbaceous and Border Plants, at 12; Palms and Plants, at 5; at Protheroe & Morris's Rooms.

THURSDAY—
Special Sale of Roses and Fruit Trees, at 1; at Protheroe & Morris's Rooms.

The Last Traces of Bygone Civilisations.

Archæologists have wrought marvels in discovering traces of the dead past of bygone civilisations. They have dug down beneath living cities and found remains of earlier civilised communities; from beneath these remains they have brought to light vestiges of yet more primitive cities. Nevertheless, the archæologist may only recover what the heavy hand of time has not destroyed, and it remains the privilege of the agricultural chemist to be able to point to this or that locality, now bare of any tangible relic of human occupation, and to say a city once stood here. The clue which the chemist possesses is as simple as it is convincing. The multitude of a city must be fed. Throughout the centuries of its existence the surrounding country sends its crops and live-stock to be consumed by the inhabitants of the city. Those crops and that live-stock represent so much drain of mineral substance from the land. Of this mineral substance, some—the nitrogen compounds—are distributed again slowly and by natural agencies over the land whence they came. The organic nitrogen of the food stuffs is changed by bacteria and other organisms back again into inorganic form. The nitrates are converted into ammonia and nitrogen, which return in the air to the fields from which they were taken by the crops. But, as pointed out by Dr. Russell (*Nature*, December 26, 1912), in a review of recent publications on the fertility of the soil, other mineral substances contained in food stuffs are more stable. The phosphates, for example, derived from the remains of animals and plants, are not readily returned into circulation. Brought as foodstuffs from far and wide into the city, they are used by the citizens, and, sooner or later, pass into the ground in the neighbourhood of the city. Thus, during the ages which measure the life of a human settlement, the ground in the vicinity grows increasingly rich in phosphates. Thus it is that, by the richness of the soil in phosphates, towns of which no other wrack remains may be located. That phosphates may indicate the site of decayed cities is demonstrated by the investigations of Messrs. Hughes and Aladjem, published in the *Agricultural Journal of Egypt* (vol. 1, part ii). It was observed by these investigators that, although in other respects the soil of the Delta is fairly uniform, it shows considerable variation in its phosphate-content. Detailed inquiry in a particular case demonstrated that one of these pockets of phosphate is located on the site of a dead city—Kom—once of no mean size. The city existed for a period estimated at 4,000 years before the advent of the Arabs. Analyses show in the most impressive way that the amount of phosphate in the soil is proportional to the distance of that soil from the centre of the city. In his review, Dr. Russell quotes the following results of analyses recorded by Messrs. Hughes and Aladjem:—

Distance from the centre of Kom: Kilometres	0-1	1-2	2-3	3-4	4-5
Total phosphoric acid: Per cent ...	.34	.29	.26	.22	.22

. . . . "Alexander died, Alexander was buried, Alexander returneth into dust, the dust is earth, of earth we make loam"—and the phosphates mark the graves of countless Alexanders.

The Loss of Water by Young and Old Leaves.

Everyone who deals with plants knows that the leaves give off or transpire large quantities of water, and most gardeners, if asked whether young or old leaves transpire most would pronounce unhesitatingly in favour of the former. Careful observations by R. Seeliger (*Bot. Centblatt*, No. 49, 1912) demonstrate that the pronouncement is correct. By measuring the rate of loss of water from leaves of Populus, Vitis, and other trees and shrubs, this observer finds that, as the leaf unfolds, its rate of transpiration increases to a maximum which in all cases is greater than that reached by the leaf in its full-grown, mature state. The maximum loss of water occurs early, before the leaf has attained to half its full development; soon after the maximum degree of transpiration has been reached the rate begins to fall, and, continuing to decline, reaches a minimum either before the leaf has attained its maximum size (Vitus vinifera, &c.), or at that time (Platanus Pseudoplatanus and Prunus Cerasus). After the complete development of the leaf, the transpiration rate again rises, though it remains considerably less than in the young, half-grown leaves. The variegated leaves of Acer platanoides transpire about half as much as green leaves from the same branch, and yellow leaves of Cornus transpire less than green leaves of equal size. There is but little difference with respect to rate of transpiration between the red and green leaves of Sorbus terminalis. Nor is age the only factor which influences rate of transpiration. Leaves of Populus situated on the lower part of a shoot transpire more actively than those nearer the apex, and the leaves on suckers of Acer pseudoplatanus are more active than those on the branches of the tree. Those who cultivate vines and other plants, though they will find little that is new to them in these observations, will note how they tend to confirm practice, particularly with respect both to the necessity of providing plants just starting into growth with a plentiful supply of water and to the need for not checking transpiration by maintaining a "too close" atmosphere.

Coloured Plate.—The subject of the coloured plate to be published with the next issue is Ipomæa rubro-cœrulea.

FRENCH HONOUR FOR SIR HARRY VEITCH.—The French National Society of Acclimatisation has awarded Sir HARRY J. VEITCH, V.M.H., their large medal, bearing the effigy of ISIDORE GEOFFREY SAINT HILAIRE, "in recognition of services rendered by the introduction of numerous exotic species of trees and shrubs which can be cultivated in the open air in Europe." This recognition applies more particularly to introductions from China. The presentation of the medal will take place on the 9th inst., when Sir HARRY VEITCH will be represented in Paris by Mr. TRUFFAUT, of Versailles.

NATIONAL DAHLIA SOCIETY.—A conference will be held under the auspices of the National Dahlia Society at Carr's Restaurant, 264, Strand, on the 14th inst., commencing at 6.30 p.m. The president, Mr. GEO. GORDON, V.M.H., will preside. Papers will be read as follow:—"Exhibiting and Judging Dahlias," by Mr. W. C. WYATT, of Messrs. KEYNES, WILLIAMS & Co.; "The Future of the Dahlia," by Mr. F. G. TRESEDER; and "Garden Dahlias," by Mr. A. J. COBB, Duffryn Castle Gardens, Cardiff.

GEO. MONRO LTD., CONCERT COMMITTEE.—The balance-sheet of the concert, held on February 15, 1912, shows receipts amounting to £239 19s. 1d., which, together with a balance of £69 5s. 3d. remaining from 1911, gives a total income of £309 4s. 4d. Expenses amounted to £185 13s. 2d., so that there remained a surplus of £123 11s. 2d., of which £50 8s. was distributed to charities, hospitals, and other funds, leaving £73 3s. 2d. carried forward. The next concert is fixed for the 20th inst., under the presidency of Mr. GEO. MONRO. The band of the Coldstream Guards has been engaged, and the artistes include Mme. ADA CROSSLEY, Miss CARRIE TUBB, and Mr. HARRY DEARTH.

Heredity and Mutation. — The following is a summary of the first lecture of the course on "Heredity and Mutation," which Dr. R. R. Gates is delivering at the Imperial College of Science, South Kensington:—Ever since the fact of organic descent with modification first gained general assent, the phenomena of heredity have increasingly occupied the attention of biologists. Organisms, except perhaps the lowest, differ most strikingly from inorganic bodies in that they pass through a regular series of developmental stages, and it is this fact, in connection with heredity, which really appears so wonderful. In considering heredity, three classes of phenomena which are all phases of the heredity process need constantly to be kept in mind: (1) heredity, including resemblance to the parents; (2) variation or difference; (3) the environment during every stage of the process. The structure of the germ cells, and particularly of their nuclei, is of fundamental importance in the study of heredity. The cytoplasm of the cell constitutes the environment of the chromosomes in the nucleus, but the nuclear membrane is an important conservative factor in preventing various substances from entering the nucleus. The chromosomes in mitosis show genetic continuity from cell to cell and from organism to organism, while the cytoplasm, so far as is known, divides *en masse*. The facts of mitosis and of chromosome reduction show that in one unique cell division in the life cycle of plants and animals the chromosomes separate instead of dividing. Thus are formed the germ cells which contain the reduced or half number of chromosomes; the double number being restored at the time of fertilisation. There have been numerous theories regarding the relation between the chromosomes and the development of characters in the organism. The most definite case in which a direct relation between a particular chromosome and certain external characters has been shown to exist is with regard to the sex chromosomes. These chromosomes, which are peculiar in their behaviour, were first discovered in insects, where they have been most carefully studied since. They have also been found in spiders, thread worms, sea urchins, and in man himself. An odd chromosome without a mate was first observed by Henking in 1891, but McClung, in 1902, first suggested its significance as regards sex. Wilson, Montgomery, Boveri and many others have studied these chromosomes in a wide range of animals. The unpaired chromosome has since been called an accessory or heterotropic chromosome. Insects which possess it produce two kinds of spermatozoa, half containing the accessory (since called by Wilson the X-chromosome) and half devoid of it. All the eggs of such insects contain an accessory, and eggs fertilised by a sperm containing the accessory produce females with an even number of chromosomes, while eggs fertilised by the other class of sperm produce males which have an odd number of chromosomes. Another type of sperm dimorphism was afterwards discovered in certain hemiptera, in which there is a pair of unequal chromosomes, known as the large and small idiochromosome. Sperms containing the large idiochromosome produce females, while those containing the small one produce males, the eggs all containing a large idiochromosome. The large and small idiochromosomes are also known respectively as the X and Y elements. In some other families of insects the X element is compound, containing two, three, four, or even five separate bodies, which make a pair with the Y chromosome. These sex chromosomes show various peculiarities of behaviour, remaining in the condensed condition during stages of chromosome reduction (meiosis) when the other chromosomes are in a diffuse state, and frequently separating in the second meiotic division while the other chromosomes separate in the first. Confirmation of this work has been obtained from studies of the parthenogenetic aphids and phylloxerans, in which the fertilised eggs all produce females. In this case half the sperms (i.e., those lacking the X element) degenerate. In Nedapodius (hemiptera) the supernumerary chromosomes are idiochromosomes which become duplicated by passing to the wrong pole of the spindle in reduction, thus resembling in some respects the type of chromosome behaviour discovered by Dr. Gates in the mutating Œnotheras.

The Scottish Horticultural Association.—Mr. David King, the new president of the Scottish Horticultural Association, is a well-known member of the Edinburgh nursery and market-garden trades, with which he has been closely identified for many years. Mr. King served his apprenticeship at Millfield Gardens, near Polmont, and was afterwards employed in the gardens at Kinfauns Castle, Gartmore and Brechin Castle. Commencing business on his own account at Osborne Nursery, Murrayfield, in 1874, he specialised in the raising of Ferns, of which he grows very large quantities for market. About 35 years ago he introduced



MR. DAVID KING.
President of the Scottish Horticultural Society.

bowls filled with forced Tulips and Hyacinths for Christmas decoration in the Edinburgh Flower and Fruit Market. Previous to his election as president, Mr. King was convener of the Finance Committee, a member of the Council of the Royal Caledonian Horticultural Society, and president of the Edinburgh Market Gardeners' Association, which latter position he has occupied for six years. Mr. King is also one of the co-opted members of the Scottish Chamber of Agriculture.

The Food of Birds.—The Board of Agriculture and Fisheries desire to give notice that, in conjunction with the Economic Ornithological Committee of the British Association for the Advancement of Science, they are engaged on an inquiry into the food of birds, especially those believed to be injurious to farmers and fruit growers. Investigations are at present confined to the rook, the starling, and the chaffinch. The Board would be glad to receive the names of correspondents who are willing to send to an address which will be supplied them specimens of one or more of these birds at regular intervals during the year. Correspondents are wanted from all counties in England and Wales

Lectures on the Tea Industry.—A course of seven lectures on "The Economics of the Tea Trade" will be given at the London School of Economics and Political Science by S. E. Chandler, D.Sc., and John McEwan; four lectures by Dr. Chandler on "The Cultivation and Manufacture of Tea," followed by three lectures by Mr. McEwan, on "Commerce in Tea."

Lobelia Erinus floribunda, fl. pl.—A brief description is given by Mr. S. Karrer in *Möller's Deutsche Gärtner-Zeitung* (No. 51, 1912) of the new double Lobelia—L. Erinus floribunda fl. pl. The new variety bears flowers of pure sky-blue colour, and is remarkably free-flowering. The plant is low-growing, branches freely, and takes on in pots or in sunny situations a decumbent habit.

New Calanthes.—Two new Calanthes, exhibited by Mr. George McWilliam, at Boston, on January 11, are described in *Horticulture*. The first is named C. Laselliana, and is the result of a cross between C. oculata gigantea and C. McWilliamii. The flowers are of a glistening white and borne on very large spikes. The other novelty is C. Whitinæ (C. Sandhurstiana × C. Whitineana).

THE FRUIT TRADE.

A conference under the auspices of the National Federation of Fruit and Potato Trade Association and the Manchester Smithfield Markets Tenants' Association was held in the Town Hall, Manchester, on the 28th ult. The object of the conference was to discuss general questions of transport as they affect the interests of the trade. Mr. George Munro, of Covent Garden, presided. Many grievances were ventilated, and these were summed up in a general resolution to be sent to the President of the Board of Trade, President of the Board of Agriculture, and Members of Parliament. The resolution called upon the Government to initiate legislation that will remove the grievances. A revision of the existing classification of perishable goods for purposes of railway rating was demanded, also a reduction of company's risks rates, and their reassessment on the basis of owner's risk rates plus insurance. The resolution also called for more reasonable conditions of transport at owner's risk. The complaint was also made of unnecessary delays in transit, and the Government department were invited to press the railway companies for an efficient service, and to insist upon their taking up a more reasonable attitude with regard to claims for loss, pilferage, and damage. The necessity for the provision of a cheaper and more businesslike court for the settlement of railway matters than the Railway and Canal Commission was also urged, and it was suggested that the powers of the Director of Public Prosecution should be extended to enable him to undertake civil proceedings upon a certificate of the President of the Board of Trade or President of the Board of Agriculture, where such proceedings would be of general use to any body of traders, and to initiate or adopt any application to the Board of Trade for an order upon a carrying company to provide reasonable facilities for the conveyance of traffic.

The resolution also called for Government supervision of all working agreements between railway companies, and urged that the permission of the Board of Trade should be required before any company is allowed to raise its rates. Further, that there should be supervision of the rates for foreign as compared with home traffic; that arrangements should be made for the provision of cheap rates for fruit in time of glut (on the lines of excursion passenger fares); and that the Government should press the railway companies for the provision of a larger number of ventilated fruit trucks. Mr. H. Morgan Veitch, solicitor to the National Federation, who introduced the subject of railway rates and conditions of conveyance, said that the existing classification of goods for the purpose of railway rating dates from 1888, and since that date the amount of home-grown produce had increased by 63 per cent

A resolution was carried, on the motion of Mr. James Bradnum, requesting the companies to give the same service for empties as for full goods, in consideration of the fact that they now charged for the empties service.

Several speakers, says the *Manchester Guardian*, complained that companies accepted no responsibility for the delays to empty baskets, and that they were quite ignorant of the importance of empties. Large quantities of fruit were often allowed to rot for want of package.

At the beginning of the afternoon sitting, after the conference had been entertained at lunch by the Markets Committee of the Manchester Corporation, the delegates were addressed by Mr. Hagarth Brown, of the Board of Agriculture. Many of the points they were discussing, he said, would probably be before Parliament at no very distant date, and his Board was glad to have as much information on them as possible. Turning to the matters which they had already dealt with, he noticed it was suggested that the company's risk rates should be assessed on the basis of owner's risk rates plus insurance. They should remember, however, that, whereas an insurance company could refuse to insure, a railway company could not do so, and as a mere matter of actuarial calculation the railway rate would probably be a little higher. As to the question of the expense of the procedure of the Railway Commission, the matter had been very carefully considered and reported on by the Board four years ago. They had then suggested that the Registrar of the County Court should be given jurisdiction in case of certain claims, and he thought the traders might consider the suggestion.

It was decided to send a deputation to the Board of Trade to urge the importance of the matters dealt with in the general resolution.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

"SMALL LANDHOLDERS' HANDBOOK."—My attention has been directed to a criticism of the *Small Landholders' Handbook* in a recent issue (see p. 467), and I trust you will allow me space to refer to the points treated by the censor. (1) I am taken to task on the method of planting Cobnut trees. These are never mentioned; in short, they would be one of the last kinds of produce anyone would recommend for culture on small holdings, at least in Scotland. (2) Planting Apple trees at 12 feet apart is the proper distance for those on the Paradise stock, and at 6 feet apart in the row, with a view to transplanting for extension four or five years afterwards. The transplanting of fruit trees after several years' growth is usually followed with good results when the operation is performed carefully at the proper time. (3) In planting a large number of Apple trees, the most economical method, such as smallholders would have to adopt, is to purchase maidens, which are less than half the cost of older plants, and grow them in nursery lines, from which they can be planted as required. If they are attended to in the matters of pruning, mulching and watering in dry weather, there is no reason why they should be stunted as compared with trees from nurseries. (4) The smallholding is supposed to be self-supporting, and any feeding stuffs or artificial manure (the latter I do not appreciate where there is abundance of manure from natural sources) is secured from surplus grain and roots sold from the holding; the income and expenditure being deduced from average alone. The amount of income for fruit according to your critic should be reduced by half. Most practical commercial horticulturists will agree that £50 per acre from plants in full bearing is a moderate estimate. I agree with the assumption that in young and very old plantations, that amount would not be realised, but with the exception of Strawberries, hardy fruit trees and bushes under good treatment would continue to yield the amount stated for at least 40 years. Few are aware of the enduring vitality and bearing capacity of the kinds mentioned. For example, Raspberries known to be 100 years old have been grown by the writer, and bore fair crops at that age. It may be averred that this plant renews its growth every year, but most of our bushes worked on the thinning-out, rejuvenating system would be in a measure similarly accommodating. Of course, in every soil, and under every kind of management, such endurance could not be expected. But altogether with rational treatment in cultivation and cropping the trees would continue to yield good fruit and crops beyond the ascribed limit. *W. Williamson, Edinburgh.*

———(1) I must apologise to Mr. Williamson for my error in imputing to him a statement which does not occur in his book, but does occur in another volume on the same subject I read at the same time. (3) I adhere to my objection as to the stunting effect of planting maidens in a nursery bed for transplanting a year or two later. It would be much better to plant them in their final quarters at once. As to planting Apples on Paradise stock, 6 feet apart in rows, with a view to transplanting for extension four or five years later, there is no advantage in it. If they are so planted, they should be left to fruit until they grow into each other, when every alternate tree should be taken out. (4) The balance sheet published in the book is misleading, as big items on the debit side are omitted, while the credit totals are extravagant. It is misleading to give the returns only of trees in full bearing and in good seasons as the average returns on a fruit farm. *B.*

THREE FAMOUS GARDENERS.—The excellent portraits of the three famous gardeners on p. 76 reminds me vividly of the late Mr. Wildsmith and the remarkable garden at Heckfield which he managed so well. No one, with the exception of those who served under him, knew this prince of gardeners better than myself, and certainly no one has greater cause to appreciate the sound advice and counsel he so freely gave. My first acquaintance with him occurred at the autumn show of the Southampton Society in 1880, where he was one of the judges and I was a humble exhibitor of Chrysanthemums. For several years he had a decided objection to the large Chrysanthemum blooms which at that time were very popular, but as time passed he softened very much in his dislike, and eventually became much enamoured of the flowers. Finally he formed a collection, competed at the shows, and won at Devizes the only gold cup ever offered for Chrysanthemums in this country. There were five remarkable features in the garden at Heckfield, which are not excelled in any garden of my acquaintance. First, the gardens were maintained scrupulously clean and trim in every detail; second, the remarkable success with Peaches out-of-doors; third, the effective manner of filling the flower-beds both in summer and winter; fourth, the excellence of the early Grapes (Black Hamburgh); fifth, the remarkable crops of Lady Downe's Grape. Many other commendable features might be named. *E. Molyneux.*

THE CORSICAN PINE.—I have nothing to say respecting the value of this Pine as a timber-producer, but I can endorse Mr. Elwes's remarks as to its costliness in a young state. In many nurseries the raising of young Corsican Pines has been almost given up, the rate of mortality amongst the young plants being so high that it is not profitable to grow them. There are comparatively few of the buying public who have any knowledge of the difficulties experienced with this Pine, and it is almost impossible to get a remunerative price for those which survive after being transplanted. When forest trees are sold by the thousand at cheap rates, say, from 15s. to 50s. per 1,000, according to size and quality, there is not profit if from 50 per cent. to 80 per cent. die when set out in nursery quarters, which happens in 99 cases out 100 with the Corsican Pine. It is, however, only in a small state that this Pine is difficult to transplant, as I have seen plants 6 feet and more in height moved with very little loss. I have noticed the same thing with other subjects, especially Hollies, that are bad to move when small, but which transplant readily when they get larger and begin to hold a ball of soil. There is, however, no necessity, so far as I can see, to plant Pinus Laricio when there are other and better timber trees that grow equally well, and transplant much more readily. One of the coming timber trees in this country, which is being extensively planted, is the Douglas Fir. The timber of this tree has been described as hard, close-grained, free from knots, and easy to work. The tree is of rapid growth, succeeds in nearly all soils, and is also free from the attacks of insect pests and fungal diseases. Thuya plicata (T. gigantea or T. Lobbii) has also been in demand these last few years with certain experimental planters, partly for its timber and partly because its rapid growth and dense foliage help other subjects to run up. *J. Clark, Bagshot, Surrey.*

———Since writing my note, which appeared on p. 28, we have cut up some trees of this Thuya, and I was surprised at the useful material we obtained from the 30-year-old trees. The wood is clean with but few knots, considering the number of branches borne, and it will be especially serviceable for inside work. In colour the timber is almost white, and should plane up to an excellent surface. The altitude here is 400 feet above sea level. I was surprised to read Sir Herbert Maxwell's note on p. 60 that this Thuya is easily injured by frost, as I have never found frost to injure it in the slightest degree in any stage of growth. The drought in 1911 killed many large specimens in this neighbourhood, whereas small trees were unharmed. *E. Molyneux.*

APPLES WITH MORE THAN 10 SEEDS.—In the *Gardeners' Chronicle*, November 16, 1912, p. 375, Mr. Chittenden is reported as having brought to the notice of the Scientific Committee of the Royal Horticultural Society the fact that in the case of many fruits of "Frogmore Prolific" Apple he found more than two seeds in a cell. As he mentioned that I had previously drawn his attention to the matter, I may say that my experience was gained with a Canadian Apple, "Fameuse," of which a supply was given to me in the autumn of 1908. I kept count of the number of pips found in 37 of these Apples, with the result that 16 were found to contain 10 or fewer, 3 had 11, 4 had 12, 3 had 13, four had 14, 3 had 15, 1 had 16, 1 had 17, 1 had 18, and 1 had 19. Although I did not actually find a case where each of the 5 cells contained 4 seeds, I came across an instance where 4 of the cells were so provided, the fifth having 3 seeds, making 19 in all. I had, therefore, come to the conclusion that four ovules per cell was the full potential number; but I see from the *Gardeners' Chronicle* of the 1st inst. that Mr. Chittenden has actually found five seeds in one cell. Clearly, therefore, the classification of Pyrus must be subjected to some revision. *William Somerville, School of Rural Economy, University of Oxford.*

BOUNTIFUL DISPLAY OF BERRIES.—In spite of the wet summer, all berry-bearing trees and shrubs provided an unusually fine display during the autumnal and early winter months. The lofty Thorn hedges assumed a crimson tint from the abundance of haws with which they were covered, while the sealing-wax-red heps of the Briar were borne in like profusion. The Holly has never fruited so freely, many trees being absolutely scarlet with berries. Tall bushes standing out from the straggling hedgerows in the country lanes, laden with great clusters of vermilion berries, presented a charming picture, while the wild Guelder Rose, with its thickly-borne fruit-trusses, each berry of which resembled a large transparent bead of rich crimson, was more than usually effective. The Strawberry Tree (Cornus capitata, better known as Benthamia fragifera) so attractive in the early summer with its large flowers of palest sulphur, was plentifully studded with corrugated crimson fruits, from which it takes its name. Some of the fruits were 3 inches in circumference, and were borne in such unwonted numbers that the branches bent beneath their weight. The Sea Buckthorn (Hippophæ rhamnoides), a shrub of which too little use is made, was equally prodigal in the matter of berries, whose bright orange tint, mingling with the glaucous hue of the leafage, provided a tender colour-harmony. The common Barberry, its arching branches thick strung with pendent, crimson fruit-clusters, presented an attractive spectacle, especially where grown in an isolated position; the coral-pink berries of the Spindle Tree were carried in countless numbers and the vivid scarlet clusters on the Mountain Ash in early autumn were borne in lavish freedom. *Wyndham Fitzherbert, Devonshire.*

Ripened Fruit Wood.—On p. 60 Mr. Small asks the question, "Does summer pruning pay?" Summer pruning and disbudding are necessary not only to obtain shapely trees, but to produce good fruiting spurs and branches, according to the variety. Everyone knows that it is possible to obtain good crops from full-grown orchard trees, with practically no pruning at all, but could we expect equally good results from young trees? I think not. Does Mr. Small maintain that ripened wood is not essential with regard to such fruits at Peaches? I know a Peach tree that for years bore no fruit on a shady wall, where the wood never ripened, but since it was moved to a sunny position it has borne, and continues to bear good crops. The wood turns a dark-brown colour, which is one of the essentials in good Peach culture. But there is a distinction between ripened wood and prematurely over-ripened wood through drought. *Owen Moring, The Old House Gardens, Freshford, Somerset.*

The Rainfall of 1912 (see p. 74).—The account of last year's rainfall is very interesting. I notice that there are but two records of a heavier rainfall for the year than that experienced here—46.01 inches. One of these was also in Hampshire, the other in Argyle. Ten years ago 30 inches was the average rainfall on this estate, since that period the amount has risen to 36 inches annually. To me this great increase is extraordinary. Rain fell at Swanmore on 178 days. The greatest number of wet days occurred during August, when there were 28 wet days. During January, February and June rain was registered on 19 days in each month. The greatest fall on one day was 1.75 inch, and occurred on September 29. We had only one wet day in April, when 1.02 inch fell. *E. Molyneux, Swanmore Park Estate, Bishop's Waltham.*

SOCIETIES.

ROYAL HORTICULTURAL.

February 4.—The Vincent Square Hall was filled with a bright display of flowers on the occasion of the fortnightly meeting on Tuesday last. The exhibits of Orchids were above the average in interest and variety, and the Orchid Committee recommended two First-class Certificates and four Awards of Merit to novelties.

The most important exhibit brought to the notice of the Floral Committee was a display of forced shrubs staged by Messrs. R. & G. Cuthbert, for which a Gold Medal was awarded. Collections of Carnations, Ferns, Cyclamens, hardy plants, and a good group of Camellias were other important features in this section. The Floral Committee granted one First-class Certificate and one Award of Merit.

The Fruit and Vegetable Committee made no Award to a novelty.

At the three o'clock meeting in the lecture-room Mr. C. F. Ball, of the Glasnevin Royal Botanic Garden, gave an address on "Plant Hunting in Bulgaria."

Floral Committee.

Present: H. B. May, Esq. (in the Chair); Messrs. Chas. T. Druery, Chas. E. Shea, W. J. James, W. J. Bean, G. Reuthe, R. C. Notcutt, C. R. Fielder, J. Jennings, J. W. Moorman, Wm. Howe, Chas. E. Pearson, John Dickson, Chas. Dixon, Edward Mawley, F. Page Roberts, W. P. Thomson, E. H. Jenkins, George Paul, John Green, James Hudson, E. A. Bowles, and W. B. Cranfield.

Messrs. R. & G. Cuthbert's exhibit of forced shrubs was staged at the foot of the wall opposite to the entrance. In the centre was a large bay composed of splendid Magnolias arranged amongst Japanese Maples, which had the effect of throwing the flowers into strong relief. This bay was extended forward, giving an undulating front. At one end of the collection was an assortment of species of Pyrus, all in beautiful flower, and at the other a group of Lilacs, principally of white varieties. Other subjects dispersed throughout the group, some of them trained as standards, included Wistarias, double flowered Cherries, Azaleas, Forsythia suspensa, Staphylia colchica, and flowering Almonds and Peaches, whilst two noble plants of Magnolia Soulangeana towered above all the others. (Gold Medal.)

An excellent exhibit of forced shrubs was also staged by Mr. L. R. Russell, Richmond, for which a Silver Flora Medal was awarded. The group presented a brilliant bank of bright colours, provided by such beautiful plants as Prunus floribunda, Wistaria, Azaleas, Jasminum primulinum, Prunus triloba, Cerasus sinensis rosea and Pyrus atrosanguinea. A row of well-grown Palms provided a suitable background. In addition to the forced shrubs Mr. Russell showed several plants of Debregesia velutina in fruit.

Messrs. W. Cutbush & Son, Highgate, showed a selection of forced shrubs as a table group. The plants were of a size suitable for the decoration of stages in greenhouses and conservatories, and included Boronias, Magnolias, Azaleas, Viburnum Opulus, and Peaches. Adjoining these plants was a rock-garden exhibit in which bulbous Irises were a feature. As a separate exhibit this firm showed numerous vases of Carnations. (Silver Flora Medal.)

Messrs. W. Paul & Son, Waltham Cross, showed varieties of Camellias as pot-plants and cut blooms in baskets. There were numerous single varieties with white and red flowers; the old Donckelaari which has a mottling of white on a red ground, the peerless Alba Plena, and Montironi, another excellent double-white variety, were included. Mingled with the Camellias were double, crimson-flowered Peaches. (Silver Flora Medal.)

Messrs. H. B. May & Sons, Edmonton, were awarded a Silver-gilt Flora Medal for a collection of filmy Ferns, embracing 32 species and varieties. These interesting plants are not often seen at exhibitions. The largest specimens were of Todea superba (3 feet 6 inches across) and T. intermedia. A selection of the choicer species includes, besides the Todeas referred to, Trichomanes alabamenis, T. scandens, T. pumili, T. exsectum, Hymenophyllum demissum, and H. crispatum.

Messrs. James Veitch & Sons, King's Road, Chelsea, staged miscellaneous indoor-flowering plants, including well-grown Cyclamens, Azaleas, Lily-of-the-Valley, Freesia refracta alba, and Oranges in fruit. (Silver Flora Medal.)

Mr. H. Burnett, Guernsey, contributed a fine exhibit of perpetual-blooming Carnations, which included the beautiful yellow variety La Rayonnante. (Silver Flora Medal.)

Messrs. Allwood Bros., Haywards Heath, exhibited a small but select group of Carnations, giving special prominence to their novelty Mary Allwood and the yellow La Rayonnante. (Silver Banksian Medal.)

Messrs. Young & Co., Hatherley, also showed Perpetual-blooming Carnations, their finest variety being the clove-coloured and sweet-scented variety Duchess of Devonshire.

Messrs. Stuart Low & Co., Enfield, exhibited the variety Baroness de Brienen. In addition to the Carnations this firm showed pans of Cyclamen, including the varieties Giant White, Salmon King, and Victoria, a pretty flower tipped with red, and with frilled margins. (Silver Banksian Medal.)

Messrs. W. Wells & Co., Merstham, showed a new Perpetual-blooming, cerise-coloured Carnation of American origin named Northport, also many fine flowers of standard varieties.

Mr. G. Engelmann, Saffron Walden, was awarded a Silver Banksian Medal for an exhibit of Perpetual-blooming Carnations.

Mr. W. A. Manda, St. Albans, again showed his new Begonia "Christmas Red."

Messrs. H. Cannell & Sons, Swanley, exhibited well-grown Cyclamens and Cinerarias, the curious Bilbergia nutans, and standard plants of Begonia President Carnot.

Messrs. W. H. Rogers, Ltd., Red Lodge Nurseries, Southampton, showed a hybrid Fuchsia named Benita; the coral red flowers have relatively short tubes, and are produced in bunches at the ends of the shoots.

Charming blooms of the beautiful red Richmond Rose were exhibited by Messrs. George Mount & Sons, Canterbury.

Messrs. Sutton & Sons, Reading, showed baskets of Primulas The Duchess, Coral Pink, and the stellata form of the latter variety. Coral Pink in both its forms is exceedingly pleasing in tint.

Rock-gardens and collections of hardy flowers were numerous. Messrs. Barr & Sons, King Street, Covent Garden, were awarded a Silver Banksian Medal for a rockery arranged somewhat flat, but in excellent taste. It was planted with patches of Irises, Crocuses, Cyclamen Coum, Muscari azureum in drifts, Narcissus Bulbocodium citrinum (the sulphur-coloured Hoop-Petticoat Daffodil), Gentians, Iris reticulata, Hepaticas and other spring flowers. This firm also showed a few early Daffodils and a vase of Gerberas.

Messrs. John Piper & Sons, Bishop's Road, Bayswater, London, built a rockery with boulders of pleasant colour, which provided a fitting setting for many choice Alpines and prostrate Conifers. Amongst the last-named, Abies Nordmanniana aurea pendula and Retinospora obtusa filicioides are especially desirable. A broad sweep of Saxifraga Burseriana, with numbers of pure-white flowers, surrounded a colony of Saxifraga Winteri and a clump of Primula warleyensis. The group of Primula Megasæfolia was well flowered, and provided a good contrast to the rich blue of the flowers of Anemone Hepatica cœrulea fl. pl. On the opposite side of the exhibit many young plants of Lithospermum Heavenly Blue were flowering profusely. (Silver Banksian Medal.)

Messrs. R. Wallace & Co., Colchester, arranged a rockery on which we noticed Anchusa myosotidiflora, Fritillaria citrina, Tulipa Kaufmanniana, species of Crocus, the double-flowered Adonis, and the rare Iris orchioides cœrulea.

Mr. Clarence Elliott, Six Hills Nursery, Stevenage, also showed a rockery, in which the most prominent feature was a broad band of Saxifraga burseriana, the numerous white flowers appearing like a drift of snow. (Silver Banksian Medal.)

Messrs. G. & A. Clark, Ltd., Dover, were awarded a Bronze Flora Medal for varieties of coloured Primroses.

Messrs. Whitelegg & Page, Chislehurst, put up a rock garden exhibit planted with seasonable subjects in bloom.

Mr. G. Reuthe, Keston, showed a large number of rare shrubs, Alpines, and Camellias, for which a Silver Banksian Medal was awarded. The more interesting plants were Berberis Bealei, Anopteris glandulosa, Knightia excelsa, Chimaphila maculata, Shortia uniflora grandiflora, Pyrola chloranthes, Lycopodium complanatum, and Marattia fraxinea.

Messrs. T. S. Ware, Ltd., Feltham, showed Alpines and dwarf plants of Hydrangeas, the latter with exceptionally large inflorescences and set off by a row of Begonia Glory of Cincinnati.

The Wargrave Plant Nursery, Twyford, were awarded a Bronze Flora Medal for a rockery planted with Alpines. We noticed the rare Ribes laurifolia, Primula Megasæfolia, Crocus biflorus Alexandria (mauve and white), Olearia nummularifolia, and Scilla siberica alba, which associates pleasingly with the blue variety.

Messrs. Thompson & Charman, Bushey, Hertfordshire, arranged a rockery crowned with a clump of the white variety of Daphne Mezereum alba, Cotoneaster humifusa, and Primula Palinuri.

Rock gardens were also shown by Mr. James, Box, Lindfield, Messrs. J. Cheal & Sons, Crawley (Silver Banksian Medal), and the Misses Hopkins, Shepperton.

Mr. Maurice Pritchard, Christchurch, had a similar exhibit of Alpines and hardy flowers, as shown by him at the last meeting. (Silver Banksian Medal.)

Mr. James Macdonald, Harpenden, showed dried grasses, including sheets of herbarium specimens, also their patent method of growing grass for the making of lawns. The seeds are sown on a fabric impregnated with plant food, on which they germinate readily in a warm greenhouse. When the site of the lawn has been prepared the fabric with the growing grass is laid down in lengths as a floor is covered with linoleum. (Silver Banksian Medal.)

AWARDS.

First-class Certificate.

Polypodium irioides pendulum grandiceps.—The typical Polypodium irioides has rigidly erect, narrow, undivided fronds. In the new variety the fronds fork a few inches from the ground, and continue, as they grow, to divide and sub-divide in the manner characteristic of

Platycerium. The fronds are as broad as they are long, and the increasing weight of the growing tips makes them pendent. The plant exhibited was 15 inches high, and the pendent habit was not strongly marked, but old specimens make beautiful basket plants, producing trailing fronds a yard in length. The fronds are a rich, deep-green colour, and their texture is leathery. The plant was introduced from a garden in Queensland. Shown by Messrs. H. B. May & Sons.

AWARD OF MERIT.

Crocus chrysanthus "*E. A. Bowles.*"—This is the soft-yellow seedling of C. chrysanthus, on the beauty of which we commented in our notes on the novelties exhibited at the last meeting (see p. 61). Apart from the lovely colouring, the texture of the perianth is much firmer than in the type, the segments are broader, and the whole plant has greater size and vigour, without loss of refinement. It was raised in Mr. Van Tubergen's nurseries. Shown by Messrs. Barr & Sons.

OTHER NOVELTIES.

The Countess of Ilchester sent from her gardens at Abbotsbury, Dorsetshire (gr. Mr. Kempshall) flowering twigs of Pittosporum heterophyllum and Azara crassifolia. The former plant is a comparatively new Chinese species, having light-brown twigs and (in the specimen shown) narrow lanceolate leaves about 1½ inch in length. The small, cream-coloured flowers are deliciously scented, and borne in clusters of from 2 to 20 or more on short pedicels at the ends of the shoots of the previous season. Azara crassifolia is one of the garden names of A. Gilliesii, the largest and showiest of the species in cultivation. The leathery leaves are broadly ovate and 2½ to 3 inches in length. The flowers are collected into cylindric, catkin-like clusters, and are rich yellow, but they do not appear to have the fragrance of the commoner and hardier A. microphylla. A. Gilliesii is figured in *Bot. Mag.*, tab. 5178.

Orchid Committee.

Present: J. Gurney Fowler, Esq. (in the Chair); Messrs. Jas. O'Brien (hon. sec.), de B. Crawshay, Gurney Wilson, J. S. Moss, W. H. White, A. Dye, J. E. Shill, J. Cypher, H. G. Alexander, J. Charlesworth, F. Sander, F. J. Hanbury, S. Low, J. Wilson Potter, W. Cobb, T. Armstrong, W. Bolton, R. A. Rolfe, W. H. Hatcher, C. H. Curtis, C. J. Lucas, Sir Harry J. Veitch, and Sir Jeremiah Colman, Bart.

Messrs. Charlesworth & Co., Haywards Heath, were awarded a Silver Flora Medal for a group with a fine lot of white Lælia anceps and hybrid Odontoglossum and Odontiodas. The most remarkable new plants were Oncidioda Cooksoniæ and Oncidium splendidum aureum (see Awards), the pretty apricot-yellow Brasso-Lælio-Cattleya Joan (B.-L. Mrs. Gratrix × C. Octave Doin), Brasso-Cattleya Digbyano-Mossiæ Queen Alexandra of a clear white, B.-C. Digbyano-Mendelii, Odontoglossum ardentissimum album, Helcia sanguinolenta, and the rare white-lipped Zygopetalum Mackayi Charlesworthii. Oncidium splendidum aureum is a clear-yellow form, in which the brown colouring of the sepals and petals seen in other varieties is suppressed, and only a green shade appearing.

Lieut.-Col. Sir Geo. L. Holford, K.C.V.O. (gr. Mr. H. G. Alexander), showed Lælio-Cattleya Dorothy (C. Schröderæ × L.-C. Doris) with four flowers on a spike, sepals and petals yellow, tinged with salmon-pink, the lip deep crimson in front; Cypripedium Constantine, a noble flower of unrecorded parentage; and two distinct varieties of the clear white Cymbidium Gottianum (eburneum × insigne) named Dawn and The Pearl, both beautiful flowers and differing in the rose-purple marking on the lip.

Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. Collier), showed the handsome Cymbidium Lady Colman var. Golden Queen (see Awards) and two fine specimens of Odontoglossum Lady Roxburgh (cirrhosum × perculum) with strong, branched spikes of prettily-spotted flowers, the largest spike having 70 blooms.

H. S. Goodson, Esq., Fairlawn, Putney (gr. Mr. G. E. Day), sent Odontoglossum Wigavianum "Goodson's variety" (Wilckeanum × Rolfeæ), purple-spotted on clear yellow ground; Odontioda Thwaitesii, claret-coloured with rose lip; and Odontioda Cassiope "Fairlawn variety."

C. J. Phillips, Esq., The Glebe, Sevenoaks (gr. Mr. Bucknell), sent the very distinct Odontoglossum Amandum (see Awards); Antiope var. Reseda (Rossii rubescens × Edwardii), a pretty and distinct hybrid with a dwarf spike of claret-coloured flowers tipped with rosy-lilac, the lip being specially bright and having a white disc with red markings on the crest; and O. Phocis (Phœbe × Solon), a good and finely-blotched flower.

De B. Crawshay, Esq., Rosefield, Sevenoaks (gr. Mr. Stables), sent some promising hybrids, viz., Odontoglossum Cassandra (Urania × crispum), cream-white, evenly-spotted with red-brown; O. Calypso (triumphans × Lambeauanum), of fine shape and coloured after the manner of O. triumphans; and O. Cleopatra (Carmania × Vuylstekei), having primrose-yellow ground colour heavily blotched and with white lip having purple blotches in front of the yellow crest.

Messrs. Sander & Sons, St. Albans, were awarded a Silver Banksian Medal for an effective group of hybrid Cattleyas, Lælio-Cattleyas, Odontoglossums and Cypripediums, the best of the last-named genus being C. Lathamianum "Sander's variety" of large size and good shape, the dorsal sepal being specially fine. Interesting species were the curious little Lælia Lundii, Gongora truncata, Dendrobium gracile, Ornithidium densum, Pleione Delavayi, Epidendrum laterale and Pleurothallis cardiothallis with a singular red-brown flower resting on the cordate, green leaf.



FIG. 45.—ODONTIODA MADELINE VAR. PRINCE OF ORANGE (ODONTIODA CHARLESWORTHII × ODONTOGLOSSUM CRISPUM):
Colour, primrose-yellow, marked with reddish-lilac.
(R.H.S. Award of Merit January 21, 1913.)

Messrs. J. Cypher & Sons, Cheltenham, received a Silver Banksian Medal for a pretty group in the centre of which were a selection of Calanthe Bryan, C. Wm. Murray and C. bella. Among a good selection of Cypripediums C. Venus, C. Boltonii, forms of C. aureum, including the yellow and white variety Surprise; Phalænopsis Schilleriana, P. Stuartiana, P. Sanderiana and an excellent selection of Cypripediums.

Messrs. Jas. Veitch & Sons, Chelsea, were awarded a Silver Banksian Medal for a nice group in which were some exceptionally good, unnamed hybrid Cypripediums; Cattleya Ianthe; C. Aliciæ, of very attractive colouring; C. Trianæ Courtauldiana, a very remarkable form of fine shape which originally was heavily blotched on all the segments, but which has not since appeared so decorated, although its identity is easy to trace. Hybrid Odontoglossums with scarlet Odontioda Devossiana were also arranged in the group.

Mr. W. A. Manda, St. Albans, secured a Silver Banksian Medal for a varied selection of Cattleya Trianæ, ranging from white to the lilac-tinted delicata forms and the rich crimson-lipped varieties. Several bore coloured bands on the petals like C. T. Backhousiana, that named American Beauty being specially attractive; and some had variegated petals.

Messrs. Stuart Low & Co., Bush Hill Park, Enfield, received a Silver Banksian Medal for an effective group in which were many very fine forms of Cattleya Trianæ, the variety alboviolacea having a blue front to the lip. Another fine form was of the C. T. Premier class, and two had richly-coloured petals. C. Fabia and other hybrid Cattleyas, Lælia superbiens with three spikes, Ansellia africana, good Dendrobium Wardianum, Cymbidium Wiganianum, good Lycaste Skinneri, including the best white forms, were also noted.

A Bronze Banksian Medal was awarded to Messrs. Hassall & Co., Southgate, for a neat group in which were a very finely-coloured Lælio-Cattleya callistoglossa, several Cattleya Empress Frederick, Brasso-Lælia Helen, Miltonia Warscewiczii; the pretty Cypripedium Venus "Orchidhurst variety," a wax-like cream-white flower with small violet spots, and a selection of hybrid Odontoglossums.

H. J. Bromilow, Esq., Rann Lea, Rainhill, Lancashire (gr. Mr. W. J. Morgan), sent Cypripedium Euryades "New Hall Hey variety" in fine form, and C. Alcibiades illustris, one of the best of its class.

Mr. E. V. Low, Vale Bridge, Haywards Heath, showed Cattleya Trianæ violacea and cœrulea, both white-petalled with blue front to the lip; Cypripedium aureum virginale, and C. Venus var. Geo. Finger.

AWARDS.

FIRST-CLASS CERTIFICATES.

Odontoglossum ardentissimum Ebor, from Baron Bruno Schröder, The Dell, Englefield Green (gr. Mr. J. E. Shill).—A noble form with the largest flowers of any variety, of a good shape, clear white heavily blotched with bright claret-red. The plant was splendidly grown, and bore a spike of 21 flowers.

Cymbidium Lady Colman var. Golden Queen (eburneo-Lowianum × Tracyanum), from Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. Collier).—A very fine hybrid with large flowers equal to those of C. Tracyanum. Sepals and petals golden-yellow with dotted lines of rose-purple. Lip yellowish-white with brown lines on the side lobes and spots on the front.

AWARDS OF MERIT.

Cymbidium J. Davis (Schröderiana × insigne), from J. Gurney Fowler, Esq., Glebelands, South Woodford (gr. Mr. J. Davis).—In habit this hybrid partakes most of C. insigne, the spike being erect. Flowers large, pale buff, with reddish lines. Lip white with red-brown markings.

Odontoglossum Amandum (Pescatorei × Wilckeanum), from C. J. Phillips, Esq., The Glebe, Sevenoaks (gr. Mr. Bucknell).—A very distinct Odontoglossum of fine shape and substance, the labellum being exceptionally broad and well displayed. The sepals and petals are white, the sepals having several large claret-red blotches, and the petals a band of the same colour across the middle. The lip has a purple band in front of the crest.

Oncidioda Cooksoniæ (Oncidium macranthum × Cochlioda Noezliana), from Messrs. Charlesworth & Co.—A very remarkable bigeneric cross with the trailing inflorescence and form of flower as in O. macranthum, but smaller. Sepals very dark red, petals lighter and with yellow tips, lip narrowly trilobed red with yellow crest.

Fruit and Vegetable Committee.

Present: J. Cheal, Esq. (in the Chair); Messrs. John Harrison, W. E. Humphreys, E. Beckett, Wm. Pope, George Kelf, A. R. Allan, T. G. Weston, A. Grubb, J. Davis, A. Bullock, G. Reynolds, J. Jaques, P. Tucker, H. H. Williams, H. Somers Rivers, C. G. A. Nix, and S. T. Wright (hon. secretary).

The predominant feature in Messrs. Sutton & Sons' (Reading) collection of splendid vegetables was the Sutton Variegated Kale. The colours range from rich, vinous purple to green and white, and the leaves of most of the varieties shown were finely divided. Although these variegated Kales may be eaten, their colour would deter any persons from doing so, but they are very valuable for border decoration at a

season when outdoor flowers are scarce. The "place" for these Kales is in the kitchen garden flower borders. Such Turnips as Snowball, Green-top, White and Early Red Milan were surprisingly good. The two Broccoli (Snow White and Sutton's Superb Early White) were large and of dazzling whiteness. Seakale, Mushrooms, Chicory, and Leeks were also of high quality. (Silver Knightian Medal.)

Messrs W. SEABROOK & SON, Chelmsford, exhibited many baskets of excellent Apples. The dessert varieties included such well-known sorts as Cox's Orange Pippin, Blenheim Pippin, Sturmer Pippin, Rosemary Russett, Claygate Pearmain, and May Queen. Amongst culinary sorts we especially noted Bramley's Seedling, Lord Derby and Bismarck. (Silver Knightian Medal.)

Messrs. JAMES CARTER & Co., Raynes Park, made a very attractive display with Potatos of many different kinds. The coloured-skinned varieties were greatly in evidence, and comprised such varieties as Crimson Exhibition, Pink Exhibition, Ruby Queen, Towser, in bright colours, whilst the darker sorts were The Dean, Edgecote Purple, and Herd Laddie. Amongst the white-skinned sorts, Royalty, The Factor, Carters' Advancer and Long Keeper were especially clean and shallow in the eye. (Silver-gilt Banksian Medal.)

Many pots of whole-fruit jam and marmalade were shown from the orchards of Sir WALTER GILBEY, Bart., Elsenham.

Mrs. MILLER, Moyleen, Marlow, exhibited various fruit syrups.

Messrs. BARR & SONS, Covent Garden, London, showed a collection of variegated Kale of various shades of purple colour.

Report of the Council for 1912.

THE annual meeting of the Fellows of the Royal Horticultural Society will be held on Tuesday next, the 11th inst., in the Society's Hall, at 3 p.m. We make the following extracts from the report of the Council :—

INTERNATIONAL EXHIBITION, 1912.

The great horticultural event of the year was undoubtedly the Royal International Horticultural Exhibition held at Chelsea on May 22 to 30. The Exhibition owed its inception to our Society, but it was for many reasons thought better that the Society should act as a benevolent god-parent rather than as the responsible promoter of the Exhibition, which was accordingly organised by a small public company, of which his Grace the Duke of Portland, K.G., was the president, Mr. J. Gurney Fowler the chairman, Sir Jeremiah Colman, Bart., the treasurer, and Mr. Edward White the managing director, the Society standing, as it were, behind them with its subscription of £1,000 and its guarantee of £4,000. The Council are glad to have been informed that, owing to the magnificence of the Exhibition itself, coupled with the exceptionally fine weather all through its continuance, none of the guarantee money will be required, but, on the contrary, a substantial credit balance remains.

No words can describe the beauty and excellence of the Exhibition, which reflected the utmost credit on all the exhibitors, both British and foreign, whom the Society's officers did all in their power to assist.

In addition to the splendid hospitality extended in more immediate connection with the Exhibition itself, such as the dinner given by Mr. Leopold de Rothschild at Gunnersbury and the reception held by his Grace the Duke of Portland and the garden-party at Sir Frank Crisp's, Sir Trevor Lawrence, Bart, our president, gave a charming alfresco luncheon and reception to the foreign visitors and others at his beautiful country house and garden at Burford, and the Council held a banquet in the Society's Hall, to which over 800 guests were invited. A report of this will be found at page xcvi of the *Journal*, vol. xxxviii, part 2.

HONOUR TO HORTICULTURE.

Following on the mention of the International Exhibition, the Council cannot omit to record the honour done to horticulture by his Majesty the King in bestowing a knighthood on Sir Harry Veitch. They are sure that all Fellows of the Society will rejoice in the distinction thus bestowed upon one of the most active and useful members of the Council. Wherever gardens are valued Sir Harry Veitch's name has long stood in the front rank of those whom we honour and esteem. His energy, enterprise and success in every branch of horticulture have been most marked, especially in the introduction of valuable new trees, shrubs and plants for the embellishment of our woods and gardens.

WISLEY ROCK GARDEN AND ALPINE HOUSE.

The planting of the rock garden is proceeding as rapidly as possible, having regard to the desirability of the plants used. It is exceedingly easy to cover a rock garden in a few months with what may be called, more or less, "floral weeds," but such plants will, in 12 months, smother their smaller, slower-growing, and more valuable brethren, so that, to obtain a well-planted rock garden, it is of all things necessary to have patience, and hasten slowly.

During the past year an Alpine plant house has been erected above the rock garden, chiefly for the purpose of growing these rock plants to perfection which blossom too early to withstand our wet winters and spring frosts. In this house Fellows will be able to see such plants in flower from February onwards.

GRAPES AT WISLEY.

The policy of the Council has been to pay attention chiefly to varieties of Grapes which are both of good flavour and are less known than those usually grown, quite irrespective of the natural size of the berry, considering that a small berry of high flavour is superior to a large one with little or none. With a view of drawing public attention to these highly-flavoured though smaller-berried varieties, collections of them have been shown on several occasions at Vincent Square, and in 1911 a collection was sent to the great show of the Royal Caledonian Society at Edinburgh, and a similar collection was exhibited at Shrewsbury, in 1912, where they attracted widespread attention and were awarded a special gold medal.

NOMENCLATURE OF CAPE PELARGONIUMS.

The work of naming and collating the many synonyms of the Cape or Scented-leaved Pelargoniums sent to Wisley for that purpose has been carefully pursued, the task having been entrusted to Mr. John Fraser, of Kew. The list will appear as soon as possible in the *Journal*, but it will be necessary to continue the work in 1913, and those having collections are requested to send cuttings to Wisley in February, if they have not already done so, that they may be grown for comparison of both plant and name with those already examined, and their true names established.

TRIALS OF SUNDRIES.

During the past year a scheme for the trial of horticultural sundries has been initiated. The trials will be conducted at Wisley, and the articles sent adjudicated upon by a special committee, who will recommend suitable awards to the Council. These awards will be bestowed at the Chelsea or Holland House Shows, following the conclusion of the trial. The award cards can then be displayed by the exhibitors with the articles referred to. These special awards will remain good for 10 years, after which time the exhibitor will contract with the Council to cease advertising the award, unless it shall have been subsequently granted for another period of 10 years. The 10 years period has been established in view of the possibility of still better goods or inventions than those which first won an award coming under the Society's notice.

THE LIBRARY.

Ever since the Lindley Library came under the direct management and control of the Society in 1910 the Council have consistently pursued the policy of securing, as far as possible, any really good and desirable books on horticulture which might happen to come into the market, and in the past year about £800 has in this way been expended on books and nearly £70 on binding. Among the rarer and more valuable books thus acquired may be mentioned Gallesio's *Pomona Italiana*, Reichenbach's *Icones Floræ Germanicæ*, Jacquin's *Floræ austriacæ* and *Plantarum rariorum Horti Cæsarei Schoenbrunnensis*, Andrew's *Roses*, *The Grete Herball*, Hooker's *Pomona Londinensis*, Willdenow's *Hortus berolinensis*, Prevost's *Collection des Fleurs et des Fruits*, Laguna's *Flora Forestal Española*, Curtis's *Camellias*, and an exceedingly beautiful collection of old Chinese paintings of flowers.

DOUGLAS' JOURNAL.

In the early part of the year an application was received from the Department of Agriculture of the United States Government, requesting the loan of the *Journals* kept by Robert Douglas of his travels on behalf of the Society through North America in 1824 and the following years, together with permission to publish them if the Department thought fit. Whilst greatly desiring to comply with the request of the U.S.A. Government, which has done so much for horticulture all the world over, the Council hesitated to risk the consignment of the manuscript to such a distance, especially as it has always ranked with those rare and valuable books which are never allowed to be taken out of the library. It was, therefore, thought better that the Society should itself publish this valuable and interesting *Journal*. The secretary was accordingly requested to undertake the task of editing it and preparing it for the press. The work is unavoidably a long one, as the writing is often very indistinct, and has faded in places, and it has also been found necessary to refer the identification and nomenclature of villages, rivers, &c., to the U.S.A. Department of Agriculture, but it is hoped that it may be ready for press during the coming year.

THE GREAT MAY SHOW.

There is hardly a Fellow of the Society who has not experienced the inconvenience of the overcrowding at the Temple. The Society has received much kindness from the Master and Benchers in being allowed for so long a time to make use of their gardens, but for several years past the feeling of attachment to the Temple Garden and dislike of the crowding have been struggling together for the mastery; and now that the International Exhibition has proved that people will go to Chelsea as readily as to the Temple, the Council have unavoidably come to the conclusion that it is their bounden duty in the interest of the vast majority of the Fellows to move the show in future to Chelsea, which affords a site nearly three times as large as the Temple. The great May show will accordingly be held on May 20, 21, and 22, 1913, on the same site and in a similar tent as last year's International, and the Council hope that Fellows will individually invite and encourage their friends to attend.

HOLLAND HOUSE SHOW.

The 1912 show at Holland House was a considerable advance on previous years as regards both the quantity and quality of the exhibits, and their arrangement in the new, well-ventilated tents supplied by Messrs. Piggott. It was unfortunate that the rainy weather reduced the attendance and gate money to such an extent that £655 was lost on the show. The 1913 Holland House show will be held on July 1, 2, and 3, when better financial results are hoped for. Fellows are particularly asked to do their utmost to make this show well known amongst their friends by inviting their attendance, as it would be a great pity if such a fine annual exhibition continued to show a financial loss. Fellows ought surely to feel a pride and personal responsibility in assisting to maintain the Society's shows.

PRIMULA CONFERENCE.

A Primula conference has been arranged for April 16, 1913, when Sir John Llewelyn, Bart., will occupy the chair. The papers to be read are as follow:—

"Himalayan Primulas," by Mr. Craib, of Kew.
"European Hybrids in Nature," by Mr. Reginald Farrer.
"Primulas from a Garden Point of View," by Miss Jekyll.
"Chinese Species of Primula," by Professor Bayley Balfour, F.R.S.
"European Primulas," by Dr. John McWatt.

ORCHID SHOW AND CONFERENCE.

Ten years ago it would have been thought impossible to produce a show of Orchids at the beginning of the month of November. Certainly no one would have dreamt of such a glorious display as was to be seen at the Hall on the 9th of that month. The Hall was nearly filled with magnificent exhibits, which not only spoke of wonderful cultural skill, but also strongly emphasised the excellent work done by hybridists in bringing about such an extended season of flowering, and the debt of gratitude due to them from all lovers of flowers.

On the second day of the show a conference was held, under the chairmanship of Mr. J. Gurney Fowler, when the following papers, which will appear in due course in the *Journal*, were read, viz.:—

(1) "The Physiology of Fertilisation," by Professor F. Keeble, M.A., Sc.D.; (2) "The Application of Genetics to Orchid Breeding," by Major C. C. Hurst; (3) "Some Epiphytal Orchids," by Mr. H. G. Alexander; (4) "Albinism in Orchids," by Mr. H. G. Thwaites.

DEPUTATIONS.

In response to an invitation, a deputation from the Council, consisting of Mr. J. Gurney Fowler and Messrs. H. B. May, V.M.H., and C. G. A. Nix, attended the summer show of the Leamington Society on July 24, and made awards, when they were cordially received and entertained by Alderman and Mrs. Holt. Also on September 3 a similar deputation, consisting of Sir Daniel Morris, K.C.M.G., M.A., D.Sc., D.C.L., F.L.S., V.M.H., Sir Harry Veitch, V.M.H., and Messrs. H. B. May, V.M.H., and J. Hudson, V.M.H., visited the Centenary Show of the Glasgow and West of Scotland Society, when an excellent programme of entertainment was provided for them, including a visit to the lovely residence of Mr. and Mrs. W. J. Chrystal on Loch Lomond, luncheon with the Lord Provost and Parks Committee of Glasgow, and a tour of the public parks and gardens belonging to the city.

Invitations have been received and accepted for deputations to be sent to the Birmingham Society's show on July 18, the Cardiff show on July 23, and the Northern Fruit Congress at Kendal in October, 1913.

SPECIAL SHOWS IN 1913.

The following special exhibitions are arranged for the year 1913, viz., the Forced-bulb Show on March 4 and 5, a Daffodil Show on April 15 and 16, a Tulip Show on Wednesday, May 14, a Rhododendron Show from May 27 to 30, a Vegetable Show on September 23, and the Show of British-grown Fruits on September 25 and 26. The Fruit Show occurs a fortnight earlier than usual in order that soft fruits and the earlier ripening Apples and Pairs may be seen to greater advantage.

The notice of Fellows is specially drawn to the fact that, in order to avoid the Tuesday in Whitsun week, the fortnightly show in May will be held on Wednesday, May 14, instead of, as usual, on a Tuesday.

R.H.S. CUPS, 1913.

The Council have decided in future to adopt one special and distinctive form of cup for each year, and to have it made in four different sizes. The pattern adopted for 1913 will be found illustrated in the Book of Arrangements (see p. 65). The four different sizes will be known as follow:—

1. The R.H.S. Silver-gilt Cup.
2. The R.H.S. Large Silver Cup.
3. The R.H.S. Silver Cup.
4. The R.H.S. Standard Cup—so called because its design standardises the pattern for the year.

With regard to challenge cups and special cups for 1913, Fellows are referred to the Book of Arrangements.

DIPLOMA IN HORTICULTURE.

The committee appointed to consider the desirability of establishing a diploma in horticulture have held several meetings during the year, and have consulted a large body of persons whose opinion was considered of value, and have reported that it is desirable to establish such a diploma.

The Council, therefore, at once approached the President of the Board of Agriculture and Horticulture, the Rt. Hon. Walter Runciman, M.P., who most kindly met the committee, and, after hearing their views, promised, after due time for consideration, to communicate with the Council on the subject. The promised communication was promptly sent—it empowers the Society to establish an examination, conducted by a joint committee of members appointed by the Board and the Society, to determine the recipients of the Diploma, which will bear the words: "National Diploma in Horticulture, awarded by the Royal Horticultural Society, under a Scheme approved by the Board of Agriculture." The Society has consented to bear the expense (over and above the amount received for fees) attaching to this long-needed proof of ability in the art of gardening.

It is hoped that a degree of horticulture may also be established by the University of London, and it will in that case be the aim of the Council to make the Society's Diploma work up towards the University degree.

EXAMINATIONS.

The examinations of the Society are assuming greater importance every year. In 1912 a total of 1,486 candidates sat, as against 835 in 1911.

GARDEN INSPECTOR.

The number of applications from Fellows for an inspector to visit, advise, and report on their gardens has increased to such an extent of late years that it was felt to be time that a separate officer should be appointed for this particular branch, and that the superintendent at Wisley should not be so frequently called away from his own legitimate work. The Council have been fortunate in coming to an arrangement with Mr. O. R. Fielder, V.M.H., who is eminently qualified for the post, having been for many years head of the well-known and excellent gardens at North Mymms, and more recently appointed head gardener to Miss Willmott, V.M.H., at the world-renowned gardens at Warley Place.

PARLIAMENTARY COMMITTEE.

A feeling has been steadily growing amongst horticulturists that their interests require more careful watching with regard to Parliamentary and Departmental action than is possible for the Council, which is so fully occupied with the Society's more immediate business. It has, therefore, been decided to establish a Parliamentary Committee, whose work it shall be to advise the Council of the Society of opportunities—

1. For using the great influence of the Society, either in initiating legislation in favour of horticulture, or for influencing measures in any way affecting horticulture, which may at any time be introduced into Parliament; and
2. For informing the Department of Agriculture and Horticulture of the views and wishes and wants of horticulturists; and
3. For co-operating with the Department in any useful and desirable movements.

CONGRESS OF ENTOMOLOGY

Sir Daniel Morris, K.C.M.G., M.A., D.Sc., D.C.L., F.L.S., V.M.H., represented the Society at the International Congress of Entomology at Oxford in August. An extract from his report will be found at page 347 of the *Journal*, vol. xxxviii, part 2.

ROYAL SOCIETY CELEBRATION

The president, Sir Trevor Lawrence, Bart., K.C.V.O., V.M.H., represented the Society at the 200th anniversary celebrations of the Royal

NEW CORRESPONDING FELLOWS.

The following have been appointed honorary and corresponding Fellows of the Society, viz., H.M. King Ferdinand of Bulgaria, a great flower lover and botanist; Monsieur G. Gibault, Librarian to the Société Nationale d'Horticulture de France; Dr. Bertram Post, of Robert College, Constantinople; and Professor A. E. Day, of the Syrian Protestant College, Beirut, Syria.

RETIREMENT OF MEMBERS OF COUNCIL.

The Council have learned with extreme regret—a feeling which will be fully shared by all the active workers of the Society—that Mr. W. Marshall, V.M.H., acting under medical advice, is compelled to relinquish his seat on the Council and his chairmanship of the Floral Committee. Mr. Marshall has for more years than most can remember served the Society most wholeheartedly, not only by his constant presence at the meetings of the Council (to which he was first elected in 1868), but also by his kindly, genial, and yet firm guidance of the Committee over which he has presided for a long course of years. The Council have created a new office, that of Honorary Chairman of the Floral Committee, in order to still keep in touch with a name so long identified with the best traditions of the Floral Committee's work.

The Council also desire to express their sense of the constant willingness to assist them at all times, to the utmost extent of his power, shown by the Hon. John Boscawen, as well as for promoting the interests of the Society in Cornwall, and they greatly regret that distance from London makes him unable to continue to attend the meetings of the Council with the necessary regularity.

V.M.H. LIST.

It is with great regret that we have to record the death of three holders of the Victoria Medal of Honour, viz., the Rev. F. D. Horner, of Burton-in-Lonsdale—the great authority on Auriculas and Tulips; Mr. R. Fenn, of Sulhampstead—the early hybridiser of Potatos; and Mr. Alexander Dean, the Vegetable specialist, of Kingston-on-Thames. Mr. Dean's long and active career in horticulture, and his constant work for the Society and regular presence at its meetings, renders his loss widely felt.

To fill the three vacancies, the Council have bestowed this distinction upon Mr. Divers, of Belvoir Castle Gardens; Mr. Whitton, of Glasgow City Parks; and the Rev. W. Wilks, for 25 years Secretary of the Society. At the beginning of the year, the Council bestowed the V.M.H. upon Lieut.-Col. Sir David Prain, C.M.G., C.I.E., F.R.S., of Kew, and Mr. E. H. Wilson, the celebrated plant collector, to succeed Sir Joseph Hooker, F.R.S., and Mr. James Douglas, the Carnation specialist, whose deaths are recorded in last year's annual report.

OBITUARY.

The Council regret, amongst others, to have to record the death of the Dowager Duchess of Sutherland; The Right Hon. Lord Llangattock, a constant exhibitor at the Society's meetings; Lieut.-Gen. Lord Calthorpe, K.C.B.; Viscount Peel; the Hon. William Lowther; The Hon. John Ashburnham; Lady Saville; Lady Hamilton; Lady Brownlow; Sir Charles Whitehead; Sir Robert Pullar, J.P.; Major J. J. Joicey; Willie James, Esq., C.V.O.; M. Théophile Durand, Director of the Belgian State Botanic Gardens; Eduard Strasburger, the eminent German botanist; and Messrs. A. Domeier, the celebrated botanist, H. J. Adams, J. S. Bergheim, W. Fyfe, C. P. Kinnell, and Hayward Mathias.

ANNUAL PROGRESS.

The following table will show the Society's progress in regard to numerical strength during the past year:—

LOSS BY DEATH IN 1912.

		£ s. d.
Hon. Fellows	6 ..	0 0 0
Life „	11 ..	0 0 0
4 Guineas	4 ..	16 16 0
2 „	82 ..	172 4 0
1 „	88 ..	92 8 0
	191	£281 8 0

LOSS BY RESIGNATION, &c.

		£ s. d.
4 Guineas	1 ..	4 4 0
2 „	216 ..	453 12 0
1 „	410 ..	430 10 0
Associates	32 ..	16 16 0
Affiliated Societies	23 ..	24 3 0
	682	£929 5 0
Total loss	873	£1,210 13 0

FELLOWS ELECTED IN 1912.

		£ s. d.
Hon. Fellows	7 ..	0 0 0
4 Guineas	7 ..	29 8 0
2 „	605 ..	1,270 10 0
1 „	718 ..	753 18 0
Associates	50 ..	26 5 0
Affiliated Societies	18 ..	18 18 0
Commutations	14	
= £312 18s. 0d.		
	1,419	£2,098 19 0
Deduct loss		1,210 13 0
Net increase in income		£888 6 0

New Fellows, &c.	1,419
Deaths and Resignations	873
Numerical increase	546
Total on December 31st, 1911	12,839
Total on December 31, 1912	13,385

COMMITTEES, &c.

The Society owes a constantly recurring debt to the Members of the standing and special committees, chairmen, judges, writers of papers for the *Journal*, compilers of extracts, reviewers, lecturers, and the several examiners, who, during the past twelve months have done so much to contribute to the Society's usefulness, and to help maintain its high standing among the practical and scientific institutions of the world.

The Council also acknowledge their obligations to the Press for their invaluable assistance in reporting upon, and calling attention to, the work of the Society.

By Order of the Council,
W. WILKS, Secretary.

Royal Horticultural Society,
Vincent Square, Westminster, S.W.
January 1, 1913.

ADDENDUM BY THE PRESIDENT:—

THE SOCIETY AND ITS SECRETARY.

When this Report is laid before the annual meeting on February 11, 1913, exactly 25 years will have passed away since the troublous times of 1888, when the Society was reorganised, and left South Kensington.

It will be within the memory of some of the Fellows that after the death of our illustrious President, the Prince Consort, the Society began gradually to drift away from the object of its first constitution and into debt. The burden of this cannot be laid on the shoulders of any one man, nor indeed of any Committee or Council, for the Society has ever been served by most devoted men; it was rather the natural outcome of circumstances the result of which it was impossible to foresee, and though the Council and Officers wrestled long and bravely with adverse conditions, it became evident in 1887-8 that a radical alteration must be made.

All through 1887, plans for re-formation and renovation were discussed, and in February, 1888, a new Council was appointed, with Sir Trevor Lawrence, Bart., K.C.V.O., as President, Sir Daniel Morris, K.C.M.G., Treasurer, and the Rev. W. Wilks, M.A., Secretary.

Ever since that time the President and Secretary have remained unchanged. Sir Daniel Morris (who did such admirable work for the Society's finances before he was appointed by Mr. Chamberlain, then Secretary of State for the Colonies, to the important post of Imperial Commissioner of Agriculture in the West Indies) was succeeded by Mr. Philip Crowley, at whose death in 1899 the increasing burden of the treasurer's office was taken up by Mr. Gurney Fowler, to whom the Society owes much for his skilful conduct of the finances during the difficult years whilst building operations were in progress, and in more recent years with their increased financial obligations.

In 1888, as mentioned above, the appointment of the Rev. W. Wilks, then Vicar of Shirley, Croydon, as Honorary Secretary took place. It would be a grave omission were the selection then made passed over without record or remark. For it has proved a most fortunate appointment in the interests of the Society, and of the horticulture of the kingdom. The new Hon. Secretary was known as a keen gardener with a wide knowledge of many branches of



[*Photograph by Elliott & Fry.*

THE LATE EDWARD WEBB.

horticulture. But it can scarcely have been anticipated that he would develop into the ideal Secretary he has proved to be during the long period he has served the Society, now a full quarter of a century. During all these years he has shown a whole-hearted devotion to the best interests of the Society. This has been coupled with an unflagging energy and zeal, a discretion, tact and judgment, rarely at fault, and by an unfailing courtesy, which have endeared him to the Fellows to a degree seldom met with. For years Mr. Wilks was not only the Society's unpaid Secretary, but also the unremunerated Editor of its *Journal*, which he has been largely instrumental in raising to the position it now occupies. Later on, with the greatly increased burden of the work of the Society, it became necessary to add a remuneration to the office of Secretary of the Society. But whether honorary or remunerated, it is scarcely necessary to add that Mr. Wilks enjoys, and always has enjoyed, the full confidence of the Council, and they believe of the Fellows generally.

TREVOR LAWRENCE, President.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

AWARDS.

JANUARY 16.—At a meeting held on the above date the following awards were made to novelties before the Committee:—

FIRST-CLASS CERTIFICATES.

Odontoglossum amabile variety "Excelsa," a large, well-shaped flower, and evenly blotched with plum-coloured markings, from Z. A. WARD, Esq.

Cypripedium × *Princess Patricia of Connaught* (C. Alcibiades × C. nitens), showing the best features of Alcibiades but a closer flower, with deeply-coloured spots on the dorsal sepal, from S. GRATRIX, Esq.

Cypripedium × *Carola* (C. Thompsonii × C. Euryades splendens), a large flower of good shape and substance; the dorsal petal has a white ground with claret-red markings, from WM. THOMPSON, Esq.

AWARDS OF MERIT.

Odontoglossum × *James Barclay*, × *O. Violina Henderson*, × *O. Lord Pirrie*, and × *R. Le Doux*, all of unknown parentage, from R. LE DOUX, Esq.

Cypripedium × *Snowdon Range* (C. Euryades Sir Trevor Lawrence's var. × C. Leeanum), from S. GRATRIX, Esq.

Cypripedium Waltonensis var. "W. Stevens" (C. Thompsonianum × C. Rupert), from WM. THOMPSON, Esq.

Odontoglossum Harryano crispum "Ne Plus Ultra," from C. A. WARD, Esq.

Brasso-Lælio-Cattleya Cooksonii (B.-L. Gratrixæ × C. Dowiana aurea), from Col. J. RUTHERFORD.

Obituary.

EDWARD WEBB.—The funeral of the late Mr. Webb, senior partner of the firm of E. Webb & Son, whose death was recorded in the issue for January 25, took place at Stourbridge Cemetery. Mr. Webb was a member of the Royal Agricultural Society, the Smithfield Club, the Council of the Bath and West and Southern Counties Agricultural Society, and the Royal Horticultural and North of England Horticultural Societies, whilst the Royal Agricultural Benevolent Institution, the Gardeners' Royal Benevolent Institution and similar institutions benefited by his generous help.

PATRICK MCDONNELL.—American *Horticulture* records the death of Mr. Patrick McDonnell, an Irish horticulturist, who emigrated to California when a boy. He died at the age of 54.

JOHN MARTIN.—The same paper announces the death of Mr. John Martin, a veteran grower, who died on December 4 aged 80. Mr. Martin was an Irishman, but had lived for many years at Woonsocket, U.S.A.

JOHN ROSS.—We learn from our contemporary, *The Florists' Exchange*, of the death of Mr. John Ross, of Los Angeles, at the age of 82, one of the most celebrated of the Californian florists. He was a Scotsman by birth, but emigrated to America at a very early age.

JOHN NICHOLAS.—The death of Mr. John Nicholas, an English emigrant horticulturist, at Westfield, Massachusetts, U.S.A., is recorded in *Horticulture*. Mr. Nicholas had retired from business for some time.

SCHEDULES RECEIVED.

The Stevenage and District Horticultural Mutual Improvement Society.—The spring flower show will be held in the Parish Rooms on Wednesday, March 12. Secretary, Mr. H. Brotherston, The Gardens, Knebworth House, Herts.

Abbey Park Flower Show, to be held on Tuesday and Wednesday, August 5 and 6. Secretary, Mr. J. Burton, Superintendent, Abbey Park, Leicester.

Torquay District Gardeners' Association.—The spring show of this society will be held on Thursday, March 13, and the Chrysanthemum Show on Thursday, October 30. Both exhibitions will be held in the Bath Saloons. Secretary, Mr. R. W. Hodder, Oakley, Warberry Road West, Torquay.

Royal Agricultural Society of England.—A horticultural exhibition will be held in conjunction with this society's show to be held at Bristol from Tuesday, July 1, to Friday, July 4. Secretary, Mr. Thomas McRow, 16, Bedford Square, London, W.C.

Wolverhampton Floral Fete.—This exhibition will take place in the West Park, Wolverhampton, on Tuesday, Wednesday, and Thursday, July 8, 9, and 10. Secretary, Mr. R. F. Amphlett, 80, Darlington Street, Wolverhampton.

Southampton Royal Horticultural Society.—The Rose Show of this society will be held at South Stoneham House on Wednesday, June 25; the Summer and Carnation Show in the County Ground on Tuesday and Wednesday, July 15 and 16; and the Autumn Show on Tuesday and Wednesday, October 28 and 29. Secretary, Mr. C. S. Fuidge, 7, Silverdale Road, Archer's Road, Southampton.

TRADE NOTICES.

MESSRS. JOHN WATERER & SONS, LTD., Bagshot, announce that they have secured the services of Mr. H. Buckenham as their landscape gardener. Mr. Buckenham's English training was carried out under the late Mr. Markham Nesfield, and the late Mr. W. B. Thomas. He has for the past few years been engaged in landscape operations in the United States. Among the many schemes that have been carried out under his design and superintendence is Duke's Farm, the property of Mr. J. B. Duke, at Somerville, New Jersey, where upwards of 2,000 acres have been converted into pleasure grounds.

MR. E. SCAPLEHORN, who for nearly ten years has been engaged as hardy plant foreman to Messrs. Wm. Cutbush and Sons, has left that firm to undertake a similar duty with Mr. James Box, Lindfield, Sussex. On the occasion of his leaving Highgate, his colleagues in the hardy plant department presented him with a souvenir.

THE WEATHER.

THE WEATHER IN WEST HERTS.

Week ending February 5, 1913.

The eighth unseasonably warm week of the present winter.—With one exception all the days and nights of the past week were warm for the time of year. On the warmest day, the 4th inst., the temperature in the thermometer screen rose to 55°, which is 11° higher than the average maximum reading at the beginning of February. The ground is at the present time 2° warmer at 2 feet deep, and 4° warmer at 1 foot deep than is seasonable. Rain fell on four days and to the total depth of three-quarters of an inch. Some rainwater has each day come through both the bare soil percolation gauge, and also through that on which short grass is growing, but in gradually diminishing quantities as the week advanced. The sun shone on an average for 1 hour 7 minutes a day, which is 50 minutes a day short of the mean duration at the same period of the winter. On the one bright day the sun was shining brightly for 5¾ hours—the sunniest day as yet of the present winter. The winds were as a rule high, and more particularly in the early part of the week. In the windiest hour the mean velocity was 17 miles—direct west. There was about a seasonable amount of moisture in the air at 3 p.m. A selected patch of Yellow Crocuses in my garden first showed an open flower on the 4th, or 24 days earlier than its average date for the previous 26 years, and, with one exception (1894, when it was one day earlier), earlier than in any of those years.

JANUARY.

Very mild and sunless, and remarkably wet.—This proved an unusually warm January, but in the last 27 years there have been five other Januarys which have been even warmer. During the past month there were only six unseasonably cold days and but seven cold nights. On the warmest day the highest reading in the thermometer screen was 51°, and on the coldest night the exposed thermometer registered 17° of frost. Neither of these extreme temperatures is, however, exceptional for this the coldest month of the year. Rain fell on 20 days, to the total depth of 4 inches, which is 1½ inch in excess of the January average—making this the wettest January for 36 years. Snow fell on two days, and on the evening of the 22nd the ground was covered for a short time to the average depth of 3 inches. The sun shone on an average for 1 hour 9 minutes a day, which is 26 minutes short of the mean duration—making this the most sunless January for 15 years. Light airs as a rule prevailed. For only 114 hours altogether was the direction any point on the northern half of the compass. In no hour did the mean velocity exceed 18 miles—direction W.S.W. The average amount of moisture in the air at 3 o'clock in the afternoon exceeded a seasonable quantity for that hour by 2 per cent.

OUR UNDERGROUND WATER SUPPLY.

Since the winter half of the present drainage year began in October, the total rainfall has exceeded the average for those four months by 1½ inch—equivalent to an excess of 31,440 gallons on each acre in this district. At the same time last year there was an excess of 116,280 gallons per acre. *E.M., Berkhamsted, February 5, 1913.*

GARDENING APPOINTMENTS.

[*Correspondents are requested to* ***write the names of persons and places as legibly as possible.*** *No charge is made for these announcements, but if a small contribution is sent, to be placed in our collecting Box for the Gardeners' Orphan Fund, it will be thankfully received, and an acknowledgment made in these columns.*]

Mr. H. J. WEBB, for the past 5 years Gardener to ARNOLD F. HILLS, Esq., Broomfield Hall, Sunningdale, Ascot, as Gardener to FRANCIS HEYWORTH, Esq., J.P., Mansion House, Evesham, Worcestershire.

Mr. P. PAINTER, previously at Hackwood Park and Aldenham House, as Gardener to H. KEDDLE, Esq., Walbundrie Station, Albury, New South Wales, Australia.

Mr. JOHN HUNTER, for the past 2 years Foreman at Larbert House, Stirlingshire, as Gardener to Sir JAMES KNOX, Kilbirnie, Ayrshire.

Mr. HARRY EDWARDS, for the past 3½ years Gardener to CLAUDE E. S. BISHOP, Esq., J.P., Norton Priory Gardens, near Chichester, Sussex, as Steward-Gardener to MR. ARTHUR LEVITA, at the same address.

Mr. PERCY SMITH, for the past 18 months Gardener to L. A. HARRISON, Esq., Hound House, Shere, Surrey, as Gardener to J. A. BERNERS, Esq., Hellesdon House, Norwich.

Mr. W. RADLEY, for more than 8 years Foreman to Lord AIREDALE, Gledhow Hall, Roundhay, Leeds, and formerly Foreman at Marbury Hall, Northwich, Cheshire, as Gardener to Lord AIREDALE, Cober Hill, Cloughton, S.O., Scarborough.

Mr. J. H. PLANDERS, for the past 2½ years Gardener to HUGH GRAHAM, Esq., Offchurch Bury, Leamington Spa, as Gardener to Major F. DOUGLAS-PENNANT, Sholebroke Lodge, Towcester.

MARKETS.

COVENT GARDEN, February 5.

[We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general averages for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—EDS.]

Cut Flowers, &c.: Average Wholesale Prices.

	s.d.	s.d.
Arums (Richardias)	3 0	4 0
Azalea, per dozen bunches	2 6	3 0
Bouvardia, per dozen bunches, white and coloured		
Camellias, white, per dozen	1 6	2 0
Carnations, per dozen blooms, best American varieties	1 6	2 0
— smaller, per doz. bunches	12 0	15 0
— Carola (crimson), extra large	3 0	4 0
— Malmaison, p. doz. blooms:		
— — pink	12 0	15 0
Chrysanthemums:		
— white, per dozen	2 6	4 0
— — per dozen bunches	8 0	10 0
Daffodils, per doz. bunches:		
— Golden Spur	3 0	4 0
— Sir Watkin	3 0	4 0
— Henry Irving	3 0	—
— Victoria	5 0	—
— Princeps	3 0	—
Eucharis, per doz.	2 6	3 0
Freesia, white, per doz. bunches	2 0	2 6
Gardenias, per box of 15 and 18 blooms	6 0	8 0
Lilium auratum, per bunch	2 0	2 6
— longiflorum, per doz., long	3 0	—
— — short	2 6	3 0
— lancifolium alba, long	1 6	2 0
— — short	1 3	1 6
Lilium speciosum rubrum, p. doz., long	1 6	2 0
— — short	1 0	1 3
Lily of the Valley, per dozen bunches:		
— extra special	12 0	15 0
— special	9 0	10 0
— ordinary	6 0	8 0
Mignonette, per doz. bunches	3 0	4 0
Orchids, Cattleya, per doz.	15 0	—
— Cypripedium	2 0	3 0
— Odontoglossum crispum	4 0	5 0
Pelargoniums, p. dz. bunches, Double Scarlet	6 0	8 0
Roses, 12 blooms:		
— Lady Hillingdon	3 0	4 0
— Liberty	3 0	6 0
— Niphetos	1 6	2 0
— Richmond	3 0	6 0
Spiræa (Astilbe) japonica, per dz. bunches	5 0	6 0
Tuberose, p. doz. blooms, long	1 3	—
— — short	0 10	1 0
Tulips, per dozen bunches:		
— double red	10 0	12 0
— — orange	10 0	12 0
— — pink	10 0	12 0
— red	5 0	6 0
— white	6 0	—
— yellow	7 0	—
— bronze	6 0	8 0
— pink	8 0	9 0
Violets, Princess of Wales, per dozen bunches	1 6	2 0
— Anemone fulgeris	2 6	3 0

Guernsey Flowers: Average Wholesale Prices.

	s.d.	s.d.
Narcissus:		
— Soleil d'Or	1 6	2 0
— Grand Primo	1 6	1 9
— Goldenspur	2 0	2 6
— Princeps	1 6	2 0
Narcissus:		
— Henry Irving	2 0	—
— Gloriosa	1 6	1 9
— Poeticus	4 0	5 0

French Flowers: Average Wholesale Prices.

	s.d.	s.d.
Anemone, double pink, per doz.	1 6	—
Lilac, white, per bunch	3 6	4 0
— mauve	4 0	6 0
Marguerite, yellow, per doz. bnchs	1 9	2 0
Mimosa, pr. bunch	0 9	1 0
Narcissus, Paper White, pr. pad, 48 bunches	6 0	7 0
— Soleil d'Or, p. pad	5 0	6 0
Ranunculus, per doz. bunches:		
— Barbaroux	4 0	5 0
— double scarlet	8 0	9 0
— yellow	8 0	10 0
— bronze	10 0	12 0
— carmine	5 0	6 0
Roses, Safrano, pkts. of 24 blms.	1 6	1 9
Violets, per pad	3 0	4 0
— Parma, large bunches, each	2 0	—

Cut Foliage, &c.: Average Wholesale Prices.

	s.d.	s.d.
Adiantum Fern (Maidenhair), best, per doz. bunches	6 0	7 0
Agrostis (Fairy Grass), per dz. bunches	2 0	4 0
Asparagus plumosus, long trails, pr. ½ doz.	1 6	2 0
— medium, doz. bunches	12 0	18 0
— Sprengeri	10 0	12 0
Berberis, natural, per doz. bnchs	3 0	4 0
Carnation foliage, doz. bunches	3 0	—
Croton foliage, various, dz. bchs.	12 0	15 0
Cycas leaves, artificial, per doz.	3 0	12 0
Eulalia japonica, per bunch	1 0	1 6
Moss, gross bnchs.	6 0	—
Myrtle, dz. bchs. (English), small-leaved	6 0	—
— French	1 0	—
Smilax, per bunch of 6 trails	1 0	1 8

Plants in Pots, &c.: Average Wholesale Prices.

	s.d.	s.d.
Azalea, white and coloured, per dozen pots	30 0	36 0
Aralia Sieboldii, dz.	6 0	7 0
Araucaria excelsa, per dozen	18 0	21 0
Asparagus plumosus nanus, per dozen	10 0	12 0
— Sprengeri	8 0	9 0
Aspidistra, p. dz., green	21 0	30 0
— variegated	30 0	60 0
Cinerarias, p. doz.	8 0	9 0
Cocos Weddeliana, per dozen:		
— 60's	6 0	12 0
— larger, each	2 6	10 6
Croton, per dozen	18 0	30 0
Cyclamens, 48's	10 0	12 0
Cyperus alternifolius, p. dz.	5 0	6 0
— laxus, per doz.	4 0	5 0
Dracæna, green, per dozen	10 0	12 0
Erica hyemalis	10 0	12 0
— gracilis, 48's	10 0	12 0
Ferns, in thumbs, per 100	8 0	12 0
— in small and large 60's	12 0	20 0
— in 48's, per doz.	6 0	—
— choicer sorts, per doz.	8 0	12 0
— in 32's, per dozen	10 0	18 0
Ficus elastica, per dozen	9 0	12 0
Genistas, per doz.	10 0	12 0
Geonoma gracilis, 60's, per dozen	6 0	8 0
— larger, each	2 6	7 6
Hyacinths, white, in pots, p. doz.	8 0	9 0
Kentia Belmoreana, per dozen	5 0	42 0
— Fosteriana, 60's, per dozen	4 0	6 0
— — larger, per dozen	18 0	63 0
Latania borbonica, per dozen	12 0	30 0
Lilium lancifolium rubrum in pts., per dozen	18 0	21 0
Lilium lancifolium alba, in pots., dozen	18 0	21 0
Lilium longiflorum per dozen	18 0	30 0
Lily of the Valley	18 0	21 0
Marguerites, in 48's, per doz., white	8 0	10 0
Pandanus Veitchii, per dozen	36 0	48 0
Pelargonium (Geranium), double scarlet, 48's	4 0	5 0
— other varieties	5 0	6 0
Phœnix rupicola, each	2 6	21 0
Spiræa japonica, per dozen pots	6 0	8 0
— pink	10 0	12 0
Tulips, per box of 24's:		
— white	1 9	2 0
— pink	2 0	2 6
— scarlet (Tulips or Bulbs)	1 9	2 0

Plants in Pots, &c.: Average Wholesale Prices (*Contd.*)

REMARKS.—Trade has improved and prices have risen during the past few days.

Fruit: Average Wholesale Prices.

	s.d.	s.d.
Apples:		
— Cooking, per bushel	5 0	6 0
— French Russets, box	7 0	8 6
— Canadian, brls.	18 6	30 0
— Wenatchee, p. case	8 0	9 6
— American, brls.	18 6	30 0
— Californian Newtowns, case	7 0	8 0
— Nova Scotian, per barrel	14 0	22 0
— Oregon, Newtown Pippin, per case	10 6	11 6
Apricots, Cape, per box	9 0	12 0
Bananas, bunch:		
— Doubles	10 0	12 0
— No. 1	9 0	10 0
— Extra	11 0	12 0
— Giant	12 0	16 0
— Loose, p. doz.	0 6	1 6
— Red coloured	4 6	5 6
— Jamaica, per ton	£9	£12
— Jamaica Ordinary, per box (9 doz.)	4 0	5 6
Dates, per dozen	2 9	3 0
— Egyptian, cwt.	25 0	—
Cranberries, p. case	9 6	12 0
Grape Fruit, case: — 96's — 80's — 64's — 54's	16 0	22 0
— per dozen	4 0	6 0
Grapes (English), per lb.:		
— Canon Hall	8 0	12 0
— Black Alicante	1 2	2 6
— Almeria, barrel	16 6	22 6
— Gros Colman	1 2	2 6
— Belgian, p. lb.	0 10	1 6
Lemons, per case:		
— Malaga	11 0	16 6
Lemons, Messina, per case	11 6	30 0
Lychees, 1lb. box	1 6	—
Nuts, Almonds, per bag	52 6	—
— Brazils, cwt.	54 0	62 0
— Spanish, sack	40 0	42 0
— Barcelona, per bag	35 6	36 6
— Cocoanuts, 100	18 0	23 0
— English Cobs, per lb.	0 3	0 4
— Chestnuts, bg.	14 0	26 0
— Walnuts French, per cwt.	30 0	—
— Naples, p. cwt.	64 0	—
Nectarines, Cape, box	12 0	16 0
Oranges:		
— Seville, sours, case	17 6	—
— Messina, bitters, case	8 0	8 6
— Jaffa, per case	9 0	9 6
— Mandarines, p. box	1 0	5 6
— Florida Tangerines, p. case	14 0	16 0
— Denia, per case	12 6	28 0
— Californian, Seedless, case	11 6	13 6
Peaches, Cape, box	10 0	20 0
Pears:		
— Cape, box	4 0	5 0
— Dutch Catillac, ½ bushel	3 6	—
— Californian, Winter Nelis, per case	13 6	14 6
— — Easter Beurré, p. case	8 0	8 6
Pineapples, St. Michael	2 6	4 0
Plums, Cape, box	6 0	8 0
Rhubarb, doz. bndl.	0 10	1 0
— Natural	3 0	—
Strawberries, p. lb.	10 0	20 0

Vegetables: Average Wholesale Prices.

	s.d.	s.d.
Asparagus, Giant, per bundle	10 0	12 0
— English, bndl.	4 0	—
— Paris green	3 6	4 0
— Sprue, bundle	0 8	—
— Dijon	2 6	—
— Lauris	5 6	—
— Cavaillon	3 6	4 0
Artichokes (Globe), per dozen	2 0	—
— ground, ½ bus.	1 6	—
— Batavia, French, dozen	2 6	3 6
Beans:		
— Guernsey, lb.	3 0	—
— English, per lb.	3 0	3 6
— French, broad, pad	4 0	5 0
— Madeira, per handle	3 0	—
— French, per lb.	3 0	4 0
Beetroot, p. bushel	1 6	2 6
— Batavia, doz.	2 6	—
Broccoli, bushel	1 0	1 6
— bags	1 9	—
Cabbages, p. tally	3 0	—
— boxes	1 6	—
— red, per dozen	1 0	—
Carrots (English), pr. doz. bun.	2 0	3 0
— unwashed, per bag	2 6	—
— washed, bag	3 0	3 6
Cauliflowers per tally	7 0	10 0
— boxes	2 3	4 6
— Cornish, crate	3 0	4 0
Celeriac, per doz.	1 0	1 6
— French, p. doz.	3 0	—
Celery, per dozen "fans"	12 0	18 0
— unwashed	9 0	12 0
Chicory, per lb.	0 3½	—
Cucumbers, per dozen	11 0	14 0
Endive, per dozen	1 0	1 6
— French p. doz.	2 6	—
Greens, per bushel	1 6	—
— bags	2 0	—
Herbs (sweet), pkt. per gross	10 0	—
Horseradish, 12 bundles	12 0	—
Leeks, per doz.	0 8	1 0
Lettuce, French, per crate	2 6	3 6
— per dozen	2 0	—
— English, dozen	1 0	—
Mint, p. doz. bnchs.	3 0	6 0
Mushrooms, cultivated, per lb.	0 9	1 0
— broilers	0 6	0 8
— field	0 8	—
Mustard and Cress, per doz. punnets	0 4	0 6
Onions (English) per bag	3 0	3 6
— per bushel	1 6	2 0
— picklers, per ½ bushel	2 0	—
— (spring), per doz. bunches	3 0	—
— (Spanish), case	4 6	5 6
— Dutch, bags	2 0	—
Peas, French, pad of 10 lb.	5 0	—
— Guernsey, p. lb.	2 0	3 6
Parsley, per doz. bunches	2 0	
Parsnips, per bag	2 6	—
— per bushel	1 6	—
Radishes (English) per dozen	1 6	
Sage, per dozen	2 0	
Savoys, per tally	2 6	4 0
— per box	1 6	
Seakale, punnets	0 8	1 3
— outdoor, box 12 lbs.	4 0	

Vegetables: Average Wholesale Prices *(Contd.)*.

	s.d. s.d.		s.d. s.d.
Spinach, p. bushel	2 6- 3 0	Turnips (English), per dozen bunches ...	1 6- 3 0
French, crate ..	2 6 —	— per bag	3 0- 3 6
Sprouts, ½ bushel	1 0- 1 3	— unwashed, bag	2 6 —
bags	1 6- 1 9	Turnip tops, bushel	1 3- 1 6
Sprouts, bushel ...	2 0 —	— per bag ...	2 6- 3 0
Scotch Kale, busl.	1 6 —	Watercress, p. dz. bunches ...	0 4- 0 6
Tomatos, Canary, per bundle ...	9 0-16 0		
Thyme, per dozen bunches ...	2 0 —		

REMARKS:—The trade in English Apples has not been so brisk as last week. There is still a good supply of fruits of the varieties Bramley's Seedling, Dumelow's Seedling (Wellington) and Newton Wonder. Apples from Nova Scotia packed in barrels are plentiful, and there are also good supplies of Wenatchee, Oregon, and Californian Apples in boxes, of which the most attractive varieties are Spitzenberg and Winesap. Pears now obtainable are Easter Beurré and Winter Nelis (Californian). Consignments of fruits from Cape Colony received this week amounted to about 2,000 boxes, consisting of Pears (Clapp's Favourite), Peaches (very small fruits), Nectarines, Plums and Apricots. Supplies of Muscat Grapes are limited, and the crop is expected to finish this week. Black Alicante and Gros Colman Grapes are a plentiful supply. A few hot-house Strawberries reached the market this week. Shipments of Teneriffe Tomatos have been fairly heavy during the past week. Supplies of Mushrooms are about equal to the demand. Dwarf Beans are a limited supply, but Madeira Beans are plentiful. Lauris, Paris Green, and Cavaillon Asparagus are obtainable. The samples of the first-named are of excellent quality. Cucumbers are plentiful for the season of the year. Excellent Seakale is obtainable; in fact this vegetable was never marketed in better condition. Novelties in the market include Marrows from Madeira. French Salads have been scarce during the past week. Green vegetables have sold better with no material alteration in their prices. *E. H. R., Covent Garden, February 5, 1913.*

Potatos.

	per cwt. s.d. s.d.		per bag. s.d. s.d.
Bedfords	4 0- 4 6	Dutch	3 0- 3 6
Kents	4 3- 5 0	Belgian	3 6- 4 3
Blacklands ...	3 6- 3 9	German	4 0- 4 9
Evergoods	3 6- 4 0	Dunbars	5 6- 6 3
King Edward ...	4 3- 5 0	Scotch (grey soil)	4 0- 4 9

REMARKS.—Trade is not quite so good as last week, and tubers are more plentiful. Prices will have a tendency to fall slightly should the weather continue mild. *Edward J. Newborn, Covent Garden and St. Pancras, February 5, 1913.*

Answers to Correspondents

ASPIDISTRA LEAVES: *E. L., Hitchin.* The yellow spots on the leaves are caused by Ascochyta aspidistræ. Sponge all the leaves thoroughly twice a week with a rose-red solution of permanganate of potash, until the disease is checked.

CARNATIONS AND STOCKS FOR EXAMINATION: *J. W., Britwell.* The plant of Souvenir de la Malmaison Carnation has been injured by aphides and mites. There is no disease present on the Stock. Judging from the injured leaves, we fear that the atmosphere of the house is kept rather too moist.

CLIMBING ROSE FOR AN UNHEATED GREENHOUSE: *J. D. Pennell.* You may plant with every chance of success a climbing Rose in the border outside. Select a pot plant, and one known in the trade as "extra-sized." The plant should have at least one growth some 8 to 10 feet long and this could be readily passed through the hole in the wall, which you state is only 12 inches from the ground. A good variety for the purpose is Climbing Caroline Testout. Other good sorts are Climbing K. A. Victoria, Bouquet d'Or, W. A. Richardson, and Ards Rover. Dig the border fully 2 feet deep and mingle rich farmyard manure liberally with the lower soil. A quantity of ¼ inch bones would provide a good lasting fertiliser, and this may also be placed in the lower stratum of soil. The box-edging should be about 3 to 4 inches high by now.

IVY INFESTED BY CATERPILLARS: *J. L.* The larvæ are those of a Tortrix moth, allied to the species which infest Roses. If you will breed out the moth and forward it to us we will identify it for you. You had better strip the Ivy of its leaves at the beginning of March and burn them. If, later in the year, any larvæ should appear, spray the leaves with Paris Green at the rate of 2 ounces to 20 gallons of water, taking care to force the spray under the leaves.

NAMES OF PLANTS: *A. W. M. Westwick.* Carnation Mrs. Clode.—*Wermhite.* 1, Cryptomeria elegans; 2, Cupressus pisifera squarrosa; 3, Garrya elliptica; 4, Rhododendron Kæmpferi; 5, Eugenia apiculata; 6, E. Ugnii.—*W. R. C.* Juniperus Sabina.—*H. A. S.* The five Begonias are garden-raised forms, chiefly of the B. Rex class. The varieties are so numerous that we cannot name them with certainty. Send specimens to some Begonia grower. 6, Cypripedium villosum; 7, Cœlogyne intermedia.—*J. B.* Acokanthera spectabilis, sometimes called Toxicophlæa spectabilis. A shrub from western South Africa, where the whole plant is considered to some extent poisonous.—*F. F.* 1, Ornithidium densum; 2, Brassia caudata.

PEACH TREES: *J. T.* The practice of renewing a Peach house border with ordinary garden soil is rarely satisfactory, and it is not surprising that the trees do not bear good crops. At this season it would not be wise to attempt to renew the soil, and until the forthcoming crops have been gathered you have the choice of two methods. If you have reason to assume that the roots are sound you may apply a dressing of lime-rubble, which should be very lightly forked into the soil so as not to injure any roots which may be near to the surface. Failing lime-rubble, freshly slaked lime at the rate of 6 ounces per square rod may be used. If the soil is dry the border should be copiously watered. Throughout the remainder of the season, and until the fruits begin to colour, the trees should be fed liberally with liquid manure, alternating with a chemical fertiliser rich in phosphates. The alternative plan is to remove the surface soil until the roots are seen, and replace it with sufficient good compost to sustain the trees for the coming season; a layer 3 inches thick, trodden firmly, will be sufficient. This new soil should, if possible, consist of mellow pasture loam, chopped to the size of hens' eggs, three parts, and leaf-mould one part, with the addition of a 6-inch flower-pot full of bone-meal, and lime as advised to each wheelbarrow load. If horse manure can be obtained from stables where medicines are not used and where the horses are bedded on straw, it may well take the place of one half of the leaf-mould. This soil should be trodden quite firm. We do not advise the use of any chemical manure with the new soil, but when the roots have permeated it the fertilisers and liquid animal manures should be applied. The future treatment of the trees and the border should depend on the age of the trees. If they are not old and exhausted it would be advisable to lift them and properly renew the border early in the autumn.

PEAR TREE DISEASED: *W. M.* The tree is infested with the Mussel scale insect, and should be syringed in autumn and winter with kerosine emulsion or with Woburn Wash. If only a few trees are infested, the best results will follow if the specific is applied with a stiff brush. The prunings should be burnt.

PRUNING ELÆAGNUS PUNGENS: *Hix.* We do not recommend you to cut back the shoots to old wood, as the chances are that it would not break into growth again. Trim the younger growths into shape, so that the plant will form a neat head on a short stem. Provided there are leaves below the cut surfaces the pruning may be done as hard as is desirable.

PURPLE-LEAVED DWARF SHRUBS: *J. J. H.* There are not many good purple-leaved shrubs suitable for growing in pots, but we may recommend the reddish-purple-leaved Japanese Maple (Acer palmatum var. purpureum), the purple-leaved Sloe (Prunus spinosa var. atropurpurea); and the purple-leaved Hazel (Corylus Avellana var. purpurea). These may be had as specimens 3 feet to 5 feet in height; the Purple Beech and Purple Plum may be had 6 feet to 10 feet in height. There are one or two evergreen purple-leaved shrubs, but the colours are inferior and are not suitable for your purpose.

SCOTS FIRS: *M. Craig.* The small, white, flocculent patches on the shoots are the protective coverings of the common Chermes of Fir trees. The large, white bodies are formed of a gummy exudation which is clothed with a similar white flocculent matter to that which protects the insects. No practical means have been devised for destroying the insects on the smaller branches of the trees, but if the main stem and the larger branches are badly infested they may be treated with paraffin emulsion, which should be applied by means of a stiff brush.

STERILISING SOIL: *G. W. F.* One of the best methods of sterilising soil is by means of steam. Good results have been obtained by leading steam into the soil through a series of pipes made of gas-piping shaped like a harrow with nine tines out of the ends of which the steam issues. The instrument may be 2 feet 6 inches square and tines 9 inches long; the best dimensions, however, are not settled. It is placed tines downwards in a wooden case, without top or bottom, and is capable of holding about a cubic yard or more of soil. Soil is filled in, and steam at a pressure of 50-80 lbs. is blown in for 20 minutes. As each yard of soil is done it is thrown into a heap to cool gradually. By having two instruments at work the boiler is kept constantly going. The heap should not be exposed unnecessarily to rain, as valuable plant food speedily forms and is liable to be washed out. A grid-iron instrument may be used in exactly the same manner with a series of small holes drilled in the pipes. See *Gardeners' Chronicle*, February 17, 24, 1912, pp. 97, 113.

SWEET WILLIAMS DISEASED: *Enquirer.* Spray the plants with potassium sulphide, but do not mix white of egg with the specific as it encourages other fungi to grow on the leaves.

UNFRUITFUL PEAR AND PLUM TREES: *A. H. P.* Judging from the sketches which accompany your letter, the standard Plums are the only trees from which you may expect fruit this year. The "eyes" you have indicated should develop into flower-buds. The general causes of the premature dropping of the flower petals are frost, and unsatisfactory root-action, which may be due to drought, excessive wet, or an unsuitable rooting medium. You should examine the soil to ascertain its condition. If it is sour it will be wise to lift the tree and replant it in fresh soil to which lime or, better still, lime-rubble has been added. In replanting spread the roots to their full extent, first removing any that are dead and trimming those that are bruised, making a slanting, upward cut. The second Plum tree is making excessive growth, and should be root-pruned at once. The age of the Pear trees is not alone a sufficient guide as to their prospects of fruiting, as much depends on the stock. The Quince stock induces early fruiting, and certain varieties bear fair crops at a very early age, whilst trees on the free or Pear stock grow stronger and are later in fruiting. The wall-trees should be so pruned that the branches are at least 9 inches apart, and during the summer all the side growths should be shortened to six eyes, which at the winter pruning should be further cut back to four eyes, to induce the formation of fruiting spurs. The present pruning of the standard trees should consist of removing entirely all weakly shoots and those which intercross, so that the remainder, when furnished with foliage, will be just clear of each other. You will find much useful information on the subject in *The Calendar of Garden Operations*, which may be obtained from our publishing department, price 7d., post free.

VOLES: *C. S.* The following methods of destroying voles are taken from *Practical Trapping*, by W. Carnegie:—One method of getting rid of voles is to dig pitfalls about 1½ foot deep, and made wider at the bottom than at the top. In the event of the voles falling into these, they will be imprisoned, and will kill each other when trying to escape. Mouse-traps baited with Oats and cheese, and placed back to back, will catch a large number. Another way is to thread a number of Peas or grains of Maize that have been soaked in water. Then insert two sticks very firmly in the ground at the width of a common brick apart. The threaded Peas should be stretched tightly between these at about 3 inches from the ground, making the soil beneath smooth, allowing the brick to rest on the thread. In endeavouring to secure the Peas the voles will cut through the thread, and the brick will act just as in the figure 4 trap. See also the reply to *G. W.* in the last issue on trapping mice in the garden (p. 79, fig. 39).

Communications Received.—J. A. C.—W. H. C.—R. A.—Pomona—H. A. C.—H. S.—J. K. B., Utrecht—T. L.—G. K. S.—H. F. M.—D. R. W.—J. M. B.—G. E. L.—H. C. P.—W. E. B.—W. A. B.—H. S. T.—Mrs. B.—L. G.—J. H. G.—W. K., Graz—P. E. L.—H. C. A.—E. M.—E. C.—W. C.—E. P. W.—G. S. S.—C. T. D.—G. W. B.—R. J. A.—A. P. B.—A. E. N.—Mrs. A. B.—P. & Co.—M. C. A.—G. C, C.—W. H. C.—G. A. A.—H. S.—T. J. W.—J. R.—X. Y. Z.—Constant Reader—W. W. M., St. Andrews.



THE

Gardeners' Chronicle

No. 1,364.—SATURDAY, February 15, 1913.

CONTENTS.

Abbotsbury Castle destroyed by fire	105	Obituary—	
Adnitt and Naunton, Messrs., honour for	106	Peirson, H. J.	112
Blakeney Point, Norfolk	97	Shepherd, R. W.	112
Books, a sale of	106	Späth, L.	112
Books, notices of—		Orchid notes and gleanings—	
School Gardening, with a Guide to Horticulture	100	Liparis lacerata	99
Carnation propagation	107	Oncidium excavatum	99
Corsican Pine, the	106	Orchids at the Warren House, Stanmore	99
Florists' flowers—		Orchids, gift of, to Kew	105
Sowing Sweet Peas	99	Orphan Fund, Royal Gardeners'	110
Flowers in season	106	Public parks employés' examination	106
Foreign correspondence—		R.H.S. Tulip show	105
Japanese Plums	99	Scotland, notes from	99
The Riviera flower season	99	Societies—	
Fruit trees in grass land	100	Forest Gate Chrys.	111
Fruit trees, transplanting young	107	Horticultural Club	108
Gage Plums	106	National Chrys.	109
Hooker, Sir Joseph, lecture fund	105	Royal Horticultural	104, 105, 107
Hyacinth, an inverted	104	(Scientific Committee)	108
Ipomaea rubro-caerulea	104	Royal Meteorological	105
Kew Gardens, wilful damage at	105	Scottish Hort.	111
Law note—		Southampton Royal Hort.	109
Growers and undeveloped land duty	111	Vienna Hort.	106
Little, Mr. William	106	Woodbridge Hort.	109
Locusts	107	Solanum Capsicastrum "Melvinii"	101
Maize, method of increasing the sugar-content of	106	South-Eastern Agricultural College	106
Market fruit garden, the	101	Trees and shrubs	100
Nyassaland Protectorate	106	Week's work, the	102, 103
		Winter, the abnormal	106
		Young, Mr. Thomas, presentation to	106

ILLUSTRATIONS.

Blakeney Point, Norfolk, views at	97, 98
Divers, Mr. W. H., portrait of	108
Ipomaea rubro-caerulea (Coloured Supplement)	
Propagating house for Carnations	107
Sir Trevor Lawrence, Bart., making a presentation to Rev. W. Wilks	109
Solanum Capsicastrum "Melvinii"	101
Whitton, Mr. James, portrait of	108

BLAKENEY POINT, NORFOLK: THE NEW NATURE RESERVE.

THE recently-announced gift to the National Trust of the extensive tract of waste maritime lands known as Blakeney Point, in Norfolk, is an event of more than passing interest to naturalists. For not only is Blakeney Point a place unique in the British Isles, but the condition attached to the gift, that it shall be preserved as a place for the study of wild nature, shows that its acceptance marks a new departure in policy. Hitherto the National Trust has been known for its praiseworthy and successful efforts to secure and hold for the community stations characterised more particularly by their natural beauty or historic interest, as ordinarily understood, than for the sake of the plant and animal populations which inhabit them. The present acquisition, though it is fully entitled to rank as a place of great natural beauty, has been made primarily on scientific grounds, whilst the recent formation of a Society for the Promotion of Nature Reserves is a further indication of organised effort in the same direction.

The subject of the present notice, Blakeney Point, consists of a finger or spit of shingle some eight miles in length, which leaves the mainland near Weybourne on the coast road leading west from Sheringham to Wells. From the point of its departure the spit runs parallel to the shore, ending freely in the sea a little west of Blakeney at a distance of about two miles. The eastern part of the narrow area thus enclosed has been reclaimed from tidal invasion by the construction of sea walls, whilst the westerly part remains an open estuary, bordered by salt marshes and filling with the tide to form what is in effect an inland sea. By far the best point for a general view is the top of the tower of Blakeney Church, which crowns the hill up which creeps the ancient, red-roofed seaport of much former prosperity. Beyond the shining marshes, with their winding creeks and minor shipping towards the outlet, is the great shingle bank—a broad and toilsome causeway some 500 feet in width—and outside this the North Sea and no intervening land to the Pole. The spit of shingle is the outstanding topographical feature of this shore, and all else is subordinate to it. Under its lee an interrupted fringe of salt marshes has sprung up, whilst upon its surface—especially at its termination—blown sand from the shallow waters outside has drifted to form dunes. All this diversity of contour and relief, and much besides, is plainly visible from the church tower.

The Point may be reached in a sailing boat at high tide in a short half-hour or, less agreeably, by wading a ford at the ebb. To explore fully the area needs a day, so it is best to go when the tide is high in the early morning and return on the following tide at dusk. Landed on the extremity of the Point hard by the life-boat house, the visitor finds himself not far from the mouth of a small estuary flanked on either hand by shingle beaches and carpeted by an even sward of Salicornia marsh (some 70 acres), fed by a muddy and sinuous creek. The shingle on the seaward face is marked by several ranges of sand dunes covered with Psamma, whilst the bank on the Blakeney side separates the great Salicornia marsh from another bearing mainly Aster Tripolium—but notable also as the sole habitat here of Statice humile.

A conspicuous feature is the series of secondary shingle banks (whose crests alone are seen at the high spring tides), which, emerging from under the dunes, die out in the Salicornia marsh. These singular structures, which partition the marsh into bays, bear a rich crop of the most characteristic of all the shingle plants in this part of the world—Suæda fruticosa, the Seablite—bushes with the habit of low Junipers.

This first look round will suffice to show the essential character of Blakeney Point: the elements which compose it are the classified spoils won by the restless sea from the land and now brought back by an orderly process in the form of shingle, sand, and mud. Blakeney Point illustrates the operation of this sorting mechanism to perfection, and also the occupation of the new ground (you cannot call it terra firma) by plants appropriate to its kind.

The dunes themselves at this point occupy a present area of 100 acres, and are ever extending seawards as sand blows up and lodges amongst the pioneer Psamma seedlings that establish themselves on the growing shingle plateau. In consequence of this mode of extension the dunes are ranged in parallel series—the oldest adjoining the Salicornia marsh, the youngest close up to the drift line on the sea front. It is more particularly among these younger dunes that the wild sea fowl have their breeding grounds in spring and summer. The common and lesser terns, together with ringed plovers, have their apologies for nests scattered so thickly over this area that the visitor must go warily, lest he crush the eggs, or trample on the young nestlings shamming dead at his approach. Other dune systems occur elsewhere upon the area, and, being of prior origin and no longer in active growth, bear a more diversified and matured vegetation.

At the head of the Salicornia marsh the containing ramparts of shingle merge in the main bank, which, from this point, follows an almost straight course back to its articulation with the mainland seven miles further east. The great feature in the confirmation of the shingle is the series of lateral banks given off on the lee side of the main bank, especially throughout that part of its course which lies opposite Blakeney. These lateral banks or "hooks" must represent former active apices of the main bank which have been successively deflected landwards through the action of storms at remote periods. As the main bank continued its forward growth and these hooks became protected from direct wave impact, their shingle was stabilised—in marked contrast with that of the main bank upon which the sea continued to beat. Storm action keeps the latter unstable, rolling it over landwards at an average rate of perhaps a foot a year. This difference in stability naturally determines great differences in the vegetation. The mobile shingle remains permanently in an elementary phase of colonisation, in which the number of species of plants is limited and the association an open one. The surface of the shingle of the hooks, on the other hand, becomes turfed over by grasses and many other plants not found on the main bank, whilst many of the original



FIG. 47.—BLAKENEY POINT, NORFOLK: ONE OF THE LATERAL SHINGLE BANKS WITH SUÆDA FRUTICOSA. SALT MARSHES ADJOIN IT, WITH DUNES IN THE DISTANCE.

colonists disappear. Among the most conspicuous members of the mobile shingle association, in addition to Suæda fruticosa, may be mentioned the Horned Poppy, the Yellow Stonecrop, Convolvulus Soldanella, Rumex trigranulatus, together with the mat-forming Silene maritima and Arenaria peploides. Most of these are to be seen in full flowering glory about the beginning of July, at which season a visit would repay the gardener who works with rockeries and moraines. The problems of the shingle bank stand in close relation with those of the moraine, and unplumbed depths of delight await the cultivator who first explores the horticultural possibilities of shingle banks. Indeed, the whole range of maritime habitats deserves attention from this point of view.

Mobile shingle, in spite of its inhospitable appearance, is saturated with fresh water up to a few inches of the surface, and never dries up. All through the hot, dry summer of 1911, when the mainland was parched, the shingle plants preserved their freshness unimpaired. Whilst the constant presence of water in these beaches needs explanation, the source of the soil which occupies the interstices is more evident. This is the drift swept up by the tide from the adjacent marshes and mudflats, and consists partly of the leaves of phanerogamic halophytes and partly of the meaner Algæ, such as Rhizoclonium, Enteromorpha, and the like. These waste products of the marshes accumulate in prodigious quantities on the landward slope, and, becoming dry and pulverised, sink into the shingle; or, in more mobile regions, the blankets of drift become buried under the travelling shingle. This drift appears to play a threefold part: it feeds the bank, brings the seed, and forms a proper seed bed. Sterility on shingle banks is often referable to exclusion of drift, as when the adjacent marshes are reclaimed by the construction of sea walls. The Blakeney bank itself, further back near Salthouse, well illustrates the consequences of this operation. For with the sea beating on the bank sterility has led to high mobility, and the shingle has been scattered broadcast over the dyked marshes. This rapid travel of the shingle is analogous to the wandering of the naked sand dune, and, like the latter, should be susceptible of arrest if proper measures of planting and fertilising can be devised. In this connection it may be mentioned that the most important plant in stabilising the Blakeney shingle is Suæda fruticosa. Wherever this plant establishes itself Lichens make their appearance, and, in due course, other plants.



FIG. 48.—BLAKENEY MAIN SHINGLE BANK WITH SUÆDA FRUTICOSA INVADING THE SALT MARSHES.

Among the great rarities of the Blakeney shingle is Mertensia maritima, the Oyster Plant, of which a small colony has been under observation for several years. The nearest known locality for this plant on the east coast is Holy Island, Northumberland, and the presumption is that our plants have come from the north as ocean drift.

From what has been said, it follows that the shingle system of Blakeney, in its entirety, shows not a little complexity. The lateral hooks number at least 20, and some of them show further ramification. Among the peculiar habitats incidental to its construction are certain low depressions formed at the places of junction of these laterals and partly cut off from the tide. These provide the best localities for two beautiful plants which are at the height of their flowering at the end of July, viz., Frankenia lævis, whose mats are often smothered in rose-pink flowers, and the rare and elegant Statice reticulata—one of the endemics of the East Anglian shore.

Between the lateral banks, which may reach a length of half-a-mile, silting of mud occurs and salt marshes spring up—each an independent unit. Each marsh is fed by its own creek, which connects with the main estuary of Blakeney Harbour. The distal part of the main bank is flanked for three miles on its landward side by a series of salt marshes, on which all the principal British halophytes occur—Plantago, Aster, Glyceria, Triglochin, Artemisia, &c., and, in telling purple sheets in August, the Sea Lavender (Statice Limonium). A feature of great interest in these marshes is that the younger and older members are in different phases of development. The younger ones are homogeneous and mainly composed of Salicornia annua; the intermediate ones are more heterogeneous, from the entry of many different species; whilst the oldest are once more simplified by the invasion of Obione portulacoides (Sea Purslane), which overwhelms the pioneer forms, and, in extreme cases, gives us, as rare as it is beautiful, a close approach to a pure Obione association stretching from bank to bank. To study the later successions of the salt marsh in the absence of Obione, it is necessary to cross the estuary to a detached strip of saltings, also included in the National Trust reserve. Here the Glyceria turf is the dominant element, and dotted about on it are much Armeria and Cochlearia.

Taken all in all, the distinctive features at Blakeney are (1) the profusion in which developmental stages of all the maritime communities abound, (2) the rapidity with which change in each sort of terrain is being accomplished.

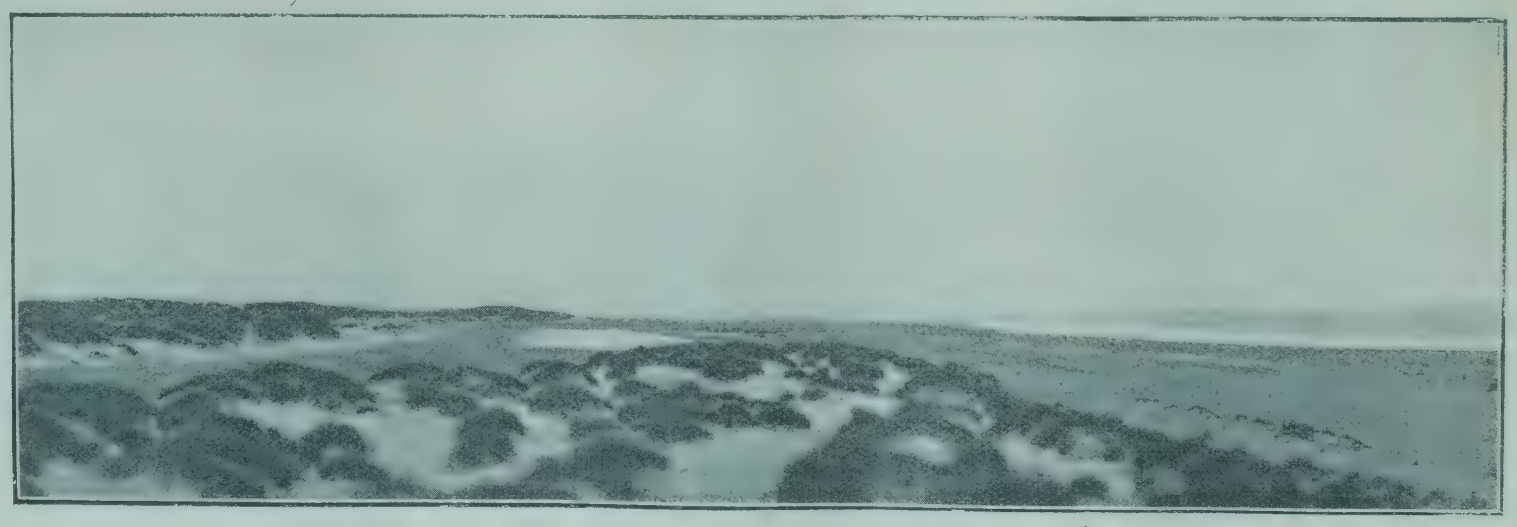


FIG. 49.—THE SAND DUNES AT BLAKENEY POINT, WHERE THE TERNS BREED.

Space does not allow more than bare mention of the fame of Blakeney Point as a place of call for winter migrants. In many and various respects, too, the fauna is full of interest, especially the insects and the rabbits—the relation of both of which to the plants is important and sometimes surprising. *F. W. Oliver.*



IPOMAEA RUBRO-CAERULEA

AN EVERGREEN TWINING PLANT FROM SOUTH MEXICO

ORCHID NOTES AND GLEANINGS.

ORCHIDS AT THE WARREN HOUSE, STANMORE.

IN Mrs. Bischoffsheim's garden at The Warren House, Stanmore, flowers for cutting and for decorative purposes are essential, and in this particular the Orchids play a most important part, more especially in supplying winter flowers. The different sections of large-flowered Cattleyas succeed each other, the late autumn-flowering C. labiata and some hybrids of it, and of C. Bowringiana, being the latest to bloom. A house of Vanda cœrulea, some of which were imported direct, have made a good show of sky-blue flowers, and the white forms of Lælia anceps have been exceptionally fine. At present, arranged with the various forms of Cattleya Trianæ, well-flowered Phalænopsis Schilleriana and other showy species, the winter-flowering Calanthes make a good display. Two of the best and most floriferous are C. Wm. Murray and C. Bryan, with their graceful sprays of white or pale pink flowers with claret centres. Calanthe Regnieri and some hybrids of it are pretty and last a long time in bloom, and the best forms of C. Veitchii are still the brightest of the rose-pink varieties. A seedling from C. Veitchii splendens has flowers of good shape and of a delicate pink tint with reddish-rose blotch in the centre of the lip. In the cool house are flowering a fine specimen of Cymbidium Tracyanum, some good white forms of Odontoglossum crispum, O. pulchellum, O. Uro-Skinneri, and other Odontoglossums. These are given strictly cool treatment by Mr. Taylor, who has charge of the Orchids, and their flowers last a considerable time when used for decoration.

ONCIDIUM EXCAVATUM.

THIS is one of the oldest Oncidiums in cultivation, having first flowered in Messrs. Loddige's Nursery at Hackney on specimens collected in Peru in 1839; nevertheless, in spite of the fact that it has been in cultivation for so long a period, it is not often seen in gardens. The plant is of strong habit, the branched inflorescence, about 18 inches high, bearing showy flowers each 1½ inch across, and in general appearance resembling those of O. Marshallianum. The flowers are bright canary-yellow with chestnut-red bands on the inner halves of the sepals and petals. Several plants of it have been in flower in the Orchid nurseries of Messrs. J. & A. McBean, Cooksbridge, Sussex, throughout the winter. It is also known in gardens as O. aurosum.

LIPARIS LACERATA.

THIS very pretty species has conic green pseudo-bulbs, elliptic lanceolate leaves, and elegant racemes of pretty flowers each about a quarter of an inch wide. The specimen from Ashton Wold which we have before us has about 120 flowers on a spray of 8 inches in length. Each flower is borne on a pedicel and ovary half an inch long. Sepals and petals are yellowish, oblong obtuse, the petals being the narrower and shorter. The lip, which forms the showy part of the flower, is oblong, the front expanded and strongly toothed, orange-red, darkest in the centre. The column, which is curved, carries the anther above the labellum in the early stage, but when it is mature becomes hooked, and thus brings the pollina near to the surface of the lip to facilitate fertilisation by insect aid. Although very rare and perhaps not in cultivation previously, Liparis lacerata is well known from the late Mr. Burbidge's drawing of a small specimen in the collection acquired by the Natural History Museum, South Kensington. It was imported from Borneo by the Hon. N. Chas. Rothschild, from whose gardens at Ashton Wold the specimen was sent.

FLORISTS' FLOWERS.

SOWING SWEET PEAS.

FEBRUARY is the best month in which to sow Sweet Peas for summer blooming. A few may have been sown in autumn to give early flowers, but for the general summer display now is the time, and under glass is the place to sow. Good reliable seeds of the best varieties cost money, but when the plants can be put out at least 1 foot apart it is evident that a very few shillings judiciously spent will provide sufficient plants to form a large plantation.

One of the largest market growers in England sows all his Sweet Peas in beds of very sandy soil in a moderately warm greenhouse, and as soon as the plants are large enough to handle he has them potted off singly into small 60's, using tens of thousands of pots for the purpose. A better plan for the gardener who only requires a few hundred plants is to sow the seeds in boxes, pans, or pots in a greenhouse, making sure that no mice can get near them. When the plants are 3 to 4 inches tall they should be removed to a perfectly cold greenhouse, or placed in a close frame for a few days preparatory to transplanting them into an unheated frame. A frame should be prepared having some good porous soil mixed with leaf-mould, and into this the plants should be transplanted, so as to stand 3 inches apart every way. This distance is not so essential to the well being of the plants at the moment as it is to allow them at planting time to be lifted singly with plenty of roots adhering. When the plants have got accustomed to the frame the centre should be pinched by removing ½ inch of the top with the thumb-nail. This will cause the plants to produce two or more shoots at the base, which will develop more strongly than would the main shoot, and form a new foundation of the plant. Pinching thus will also cause the plants to remain nice and bushy till planting out time in April.

It only remains to be said that all hard-coated seeds ought to be chipped before sowing to procure an even germination. This is easily accomplished by removing a small piece of the seed coat from the side of the seed with a sharp penknife. *Correspondent.*

FOREIGN CORRESPONDENCE.

THE RIVIERA FLOWER SEASON.

ALTHOUGH frosts were numerous in the Riviera in November and December, the weather since has been mild and the season is advanced. In the Hyères district the Violets have rarely been so good, and sometimes fields of them are literally more purple than green. The wild Narcissus Tazetta was out in sheltered spots by the marshes on January 18, and Orchis longibracteata on the 21st. This handsome Orchid is very abundant in certain places, and attains 2 feet in height later in the spring. Iris germanica and Broad Beans were in flower on January 27. At the end of the month Peas were in blossom and 4 feet high, while to-day (February 3) Cytisus triflorus is actually coming into flower on a sheltered bank. *H. Stuart Thompson, Hyères.*

JAPANESE PLUMS.

THE Japanese Plums came into general notice among the nurserymen and fruit-growers in the United States and Canada about 25 years ago. The trees grew rapidly and seemed adapted to the new soil and climate. They bore early and abundantly. Much of the fruit was of inferior quality, but a few varieties were good enough to warrant general planting. They were taken up with eagerness, especially in those extensive districts where Plums of other species had not been a reasonable success. Many large commercial orchards were planted, which in some cases have paid fair profits. At the present time, however the varieties of the Japanese species (Prunus triflora) are distinctly waning in favour. Some of the former favourites are completely abandoned and are not now listed in nursery catalogues. The varieties Burbank and Abundance, which have undoubtedly achieved the greatest popularity, are still planted in a small way, mostly in suburban home grounds; but otherwise the names so highly lauded in the lists published between 1890 and 1900 are now only a memory. The chief defects seem to be weakness of tree and lack of longevity. The trees bear abundantly for three or four years, and then deteriorate rapidly. Even at their best the fruits are not of the highest quality, though they make excellent jellies and are useful for various culinary purposes. *F. A. Waugh, Agricultural College, Massachusetts, U.S.A.* [The Burbank Plum was illustrated in *Gardeners' Chronicle*, August 15, 1896, p. 191, fig. 34.—EDS.]

SCOTLAND.

EFFECTS OF THE WEATHER.

IT is already evident that serious injury has been done this winter to shrubs and other plants in the south-west of Scotland. From a number of sources I have the same record of a wet autumn leaving Roses, Veronicas, and many other shrubs full of sap, and with the wood so unripened that it could not resist the severe frosts which occurred in December. One night in particular, the temperature fell to below zero in certain localities, while in one of the mildest districts of Kircudbrightshire, and in a garden noted for its warmth and sheltered position, the thermometer marked only two points above zero. Few things have suffered more than Roses, especially the climbers of the Wichuraiana and the Crimson Rambler classes. Pillar Roses have become exceedingly popular in the district, and many thousands have been planted, but it is to be feared that this winter will bring about a decided set-back to this method of Rose-growing. The writer is acquainted with gardens where single plants of such favourite Roses as Crimson Rambler, Dorothy Perkins, Gardenia and others covered three poles, and made a grand display, after having been established for years. Many of these Roses have been killed to the ground, while others, which formerly covered large spaces, are so crippled that there is only one growth left to form a beginning for the covering of the poles. Standards have suffered severely, but dwarfs have not been so much harmed, as a fall of snow which occurred before the frost protected them to a considerable extent. The season must be reckoned as the most disastrous one for Roses experienced here for almost a generation.

Other shrubs have suffered, and none more than Veronicas. Great bushes of V. Traversii and V. salicifolia, which had stood unharmed for years, are killed to the ground or badly crippled, while some of the others which are considered hardier than V. salicifolia have been greatly injured. Although not universal, the loss of the Arbutus has been serious. Olearias have suffered extensively. Erica vagans, which I have never seen touched by frost before—and I have grown it for almost 30 years—has been killed to the snow line, and E. lusitanica, which I have had for many years also, is very badly damaged indeed. The varieties of E. carnea are all in perfect condition, with E. mediterranea, and it is somewhat a surprise to see that E. vagans has suffered so much. *S. Arnott, Dumfries.*

NEW DUMFRIES HORTICULTURAL SOCIETY.

OWING to the suspension of the show of the Dumfries and Galloway Horticultural Society, it was decided, at a public meeting held in Dumfries, on February 1, to form a new society and to hold an exhibition next autumn. Mr. S. Arnott, Sunnymead, was appointed chairman. A provisional committee has been elected

TREES AND SHRUBS.

THE MILD WEATHER AND ITS INFLUENCE ON SHRUBS.

THE extraordinary mildness of the winter in this country, combined with an excess of rainfall, has produced a marked effect on shrubs and trees, as well as the other occupants of the hardy flower garden. I do not remember having ever seen so many subjects in flower in this garden at this time of the year. I have made the following notes of the different shrubs and plants either in flower or growth on the last day of 1912, as well as others that flower naturally at this season.

Lonicera Standishii produced its flowers some time before Christmas, and even towards the end of October the tiny, twin flowers could be found almost hidden beneath the foliage. This Honeysuckle should be included in all collections of shrubs on account of its season of flowering. Lonicera Standishii var. lancifolia, introduced from China by Mr. E. H. Wilson, differs from the type in its striking lanceolate leaves. Both plants are perfectly hardy, and the flowers deliciously scented. Cornus Mas is nearly in full flower. Daphne Blagayana is flowering on the rock-garden much before its proper season, but its fragrant, pure-white flowers are ever welcome. Both Daphne Mezereum and its white variety have been in flower for some time past. A bush of Chimonanthus fragrans grandiflora planted as a bush in the open ground has produced a large number of excellent flowers; a position on a wall is best suited to this winter-flowering subject. Several species of Hamamelis are flowering; the two best are H. mollis and H. japonica Zuccariniana. The former is decidedly the best garden plant, and easily distinguished not only when in flower, but also in growth by its large leaves, which are felted on the undersides. These shrubs are worthy of inclusion in any collection of shrubs. They are of slow growth, and should be planted in a prominent place, where they may be allowed to remain undisturbed. A large bush of Arbutus Unedo, profusely laden with its scarlet fruits and white flowers, has been an attractive object for some time past, whilst Arbutus hybrida is still producing its large, drooping racemes of greenish-white flowers at the ends of the shoots. Perhaps the most forward of all shrubs are the Cydonias, for, with the exception of C. Maulei, all are more or less in growth or flower. A splendid white variety of C. japonica, known here as Piggott's White, is almost in full bloom, as is also the richly-coloured C. Simonii and the commoner rose-coloured forms. Forsythia suspensa is breaking into growth, and a few fully-opened flowers may be seen. Several of the bush Honeysuckles, and Lonicera tartarica rosea in particular, are very attractive, with well-developed leaves of sea-green colour.

Jasminium nudiflorum is a beautiful plant in mid-winter, and is excellent for clothing a pole, pergola, or the walls of a building. Nuttallia cerasiformis, the "Oso Berry," is in full flower. This is one of the earliest-flowering shrubs, and is worth planting in any collection. It resembles a flowering Currant in habit of growth and flower; being dicœcious, both sexes should be planted. Several of the Ribes are almost in full leaf, especially R. Pringlei, R. speciosum and R. curvatum. R. laurifolium is flowering freely. This plant should find favour as a rock shrub; it is perfectly hardy, and distinct in appearance.

The Buddleias of the B. variabilis type, whilst still carrying last year's inflorescences, are already producing fresh-flowering growths freely. The pruning of these plants should be deferred till late in spring. Several of the Barberries are in flower, including B. aquilifolium, B. japonica, B. Nepalensis, and B. Darwinii, the last-named greatly in advance of its proper season. The Bay Laurel, Laurus nobilis, is very beautiful, the flower buds being on the point of expanding. Several of the Spiræas are unusually forward; S. Thunbergii being nearly in full leaf; but, though many of the flowers are fully expanded, they are fewer than usual. Both S. media and S. sorbifolia are breaking freely into growth.

Several of the Ericas are flowering, or about to do so, and a bed of E. carnea will soon be in full bloom.

The Hypericums are breaking into growth as though it were spring, especially H. patulum, H. prolificum and H. inodorum. Many plants of the Prunus family are nearly in flower. P. Davidiana alba has been wonderfully full of bloom this season; its upright branches are very pretty. P. Mume is now out, and has not been injured by frost, as happens frequently. P. Pissardii is very forward and opening its flower buds, whilst P. japonica has perfectly-developed flowers. P. Conradinæ, one of the new flowering Cherries from China introduced by Mr. E. H. Wilson, has been in flower for some considerable time. Perhaps the most remarkable of all the plants flowering at this season is Pyrus Malus floribunda. The Garryas have been particularly fine this season. Many Roses have young growths 3 inches and 4 inches long, as also has Clematis Jackmannii. *Edwin Beckett, Aldenham House Gardens, Hertfordshire.*

FRUIT TREES IN GRASS LAND.

FRUIT-GROWING in grass land seems to be on its trial at the present time, and the trend of opinion would indicate its condemnation. In America the verdict has gone against the practice, and the verdict there may be accepted as literally a "true saying." In these islands the question is still an open one, and perhaps will remain an open one, however the present generation of fruit growers may decide. The accumulated experience of centuries in its favour cannot be lightly cast away as experience based on a mistake, nor can we afford to bow to the dictates of those who for some local reason have found it to give less good results than are secured from trees growing in cultivated ground. It is not really a national question, so far at least as it applies to private gardens, but one to be decided in each case on its merits. The years 1911 and 1912 were so much opposed in weather conditions, the one extremely wet, the other extremely dry, that a very fair estimate of the comparative merits of the two systems of culture can be formed. Here, where the same varieties are planted, some on cultivated soil, others on grass, the differences observed in 1911 were very slight, if any at all. The fruits were as large in the one case as in the other, the colour was about the same, quality not distinguishable, and they kept equally well. In 1912 the differences were very marked. The largest fruits were the produce of trees on grass; they coloured better, were of finer quality, and kept longer. It must not be understood, however, that because they are growing in grass-covered soil the cultivation of the trees is neglected. The turf one year has been turned upside down and the ground resown, it has been dressed with potash manures, which seem to suit grass and the trees better than any other fertiliser, with thick surfacings of animal manure and composts, and the grass has been kept short by frequent mowing. Altogether the results in the case of Apples have been in favour of grass, but not so markedly as with Pears trained to walls. The fruit all over was rather smaller in 1912, but less markedly so where there was a surfacing of turf. The Pears grown in ordinary soil kept very badly, and Souvenir de Congrés and Marie Louise were especially bad in this respect. This was not so apparent in fruits grown in grass-covered soil; but in an especial manner was the benefit of the grass demonstrated in the flavour, which could not be finer, while the fruit from cultivated ground has been less good than usual.

All the Apricots here have been on grass land for a few years, and it might have been expected that where flavour was concerned these would benefit equally with Apples and Pears. It was not so this year, however, and I am doubtful whether a really well-flavoured Apricot ripened here; otherwise the crop was faultless, abundant, of good size and well coloured, but the want of sun and the abnormal rainfall of August spoiled the fruit so far as flavour was concerned. I cannot compare it with that from trees grown in the usual way, because all are on grass, but I believe that Apricots in this locality were comparatively flavourless. I may add that the space between the trees and on the fruit tree border is not wasted, the whole of it is planted with bulbs, and it is a fact worth noting that these have apparently no bad effect on the fruit trees. *R. P. Brotherston, Tyninghame Gardens, Prestonkirk.*

NOTICES OF BOOKS.

SCHOOL GARDENING.*

THE full title of this work is *School Gardening, with a Guide to Horticulture*; but the cover bears only the legend *School Gardening*. The table of contents shows that "The School Garden" occupies 61 pages, and that the remainder of the book (pp. 69-321) is devoted to the subject of soils, manures, cultivation of garden crops, garden pests, and miscellaneous information. In spite of the fact that the full title justifies this method of treatment we confess to a feeling of disappointment that the volume is not devoted more to the main and less to the subsidiary subject. There are numerous books which deal adequately with the practice of horticulture; there is no lack of printed and available information on the subjects of soils, manures, and insect pests. On the other hand, there is ample room for a thoroughly practical book on school gardening, and there is evidence in the volume before us that its author, Mr. Hosking, can deal authoritatively with this subject.

We could have wished, therefore, that the initial chapters of this book had been expanded even at the expense of some of the subsequent pages. Brief statements on soil sterilisation, reference to diseases such as finger and toe, late blight, and the like, without descriptions of their gross symptoms, are not of so much value in a work of this kind as would be an amplification of the chapter on the correlation of gardening with other subjects. We should like, moreover, to see a clear and considered statement of the several ways in which a school garden may be used. There is the purely horticultural school garden, and for many types of school that is perhaps the best of all. But beside the garden in which gardening is taught as "a thing in itself" there is room in schools for other types of gardens which shall serve the purpose of Nature study. There is, moreover, the school garden—only too rare, we fear—which serves as the basis for the general education of children.

Although we do not think that Mr. Hosking has produced the ideal book, yet we acknowledge that it contains a large amount of useful information, and that it will prove welcome to teachers who wish to learn the elements of horticulture, and to apply those elements to the cultivation of school gardens. At the risk of seeming pedantic we would observe that the specimen of "composition" on p. 41 is not deserving of full marks. "We set Carrots . . . . and with my fingers . . . I then set the seed." The writer of the composition appears to have done all the work whilst the other partner of the "we" looked on.

* *School Gardening, with a Guide to Horticulture.* by A. Hosking. (London: W. B. Clive, University Tutorial Press.) Pp. 312. 3s. 6d.

THE MARKET FRUIT GARDEN.

January weather was no improvement upon that of December. In the earlier month rain was recorded at my station on 18 days, and amounted to 3.80 inches; in January it was measured on 19 days, the total being 4.09 inches. The latest figures from the Meteorological Office available at the time of writing are those of the five weeks ended on February 1. As there was no rain in the last three days of December, these figures, or most of them, really represent the rainfall of the 31 days of January. For all but one of the twelve districts into which the United Kingdom is divided an excess over average is shown in the report. In eight out of the twelve districts over 4 inches were registered, while the South of Ireland had 7.53 inches, or 3.06 inches over average. England, S.W., is credited with 6.97 inches, or 2.83 inches over average, and England, S.E., with 4.19 inches, or 1.62 inch over average. The Eastern Counties, as usual, had least rain, namely, 2.92 inches, but even that was 0.96 inch over average. The only deficiency was in Scotland, N., where a fall of 5.19 inches was 1.55 inch below average. The frequency of rain was more remarkable than its quantity, measurements having been taken on 21 to 30 days. Probably in the districts which had 28 or 30 rain days, one or more of the last three days of December counted, but, at any rate, there were 21 to 30 rain days in 35 days. Temperature in every English district was above average for January, while the hours of sunshine were below the average for the period in all divisions of the United Kingdom.



Fig. 50.—SOLANUM CAPSICASTRUM "MELVINII."

Dangerous Precocity in Vegetation.

Having kept records of stages of various kinds of flowers, shrubs, and trees for 20 years, I find that the only year in which there was any close approach to the extreme forwardness of vegetation at present noticeable was 1898. In that year the Elder leaf was about one fourth expanded on January 31, as it was this season, and yellow Crocuses were in full blossom at the same date in both years. But although there were a few parallels to this season's precocity at the end of January in 1898, a severe and prolonged check took place in that year, so that my record states that most subjects were hardly any more forward at the end of March than they had been at the end of January. For example, Lilac leaf-buds were bursting on January 31, 1898, but were not much more advanced on March 31. This year the buds were swelling at the earlier date, but had not burst. Unfortunately, the double yellow Daffodil was not in my list in 1898, but since it has been there no approach to its forwardness in the present season has been noted. The flower-buds were quite yellow on January 27, and a few flowers were half-expanded on the 31st. On the former date Polyanthuses and Rob Roy Daisies were partially in flower, while some Wallflowers showed flower-buds and Primroses had been blooming freely for a fortnight. Forsythia and Deutzia scabra are early-leafing shrubs, but I have never seen them as forward as they are now. On January 28 the leaf-buds of the former were bursting, and the latter even showed a little leaf. Passing over culinary vegetables with the remark that Spring Cabbages, late Broccoli, and Savoys matured long before their proper time, I turn to the more serious subject of fruit development. The most alarming instance with me is that of the female blossoms of Cobnuts, which were showing quite commonly on January 25. There is but little chance, I fear, of a second good Nut season in succession to that of last year. Next in degree of danger, the condition of early blooming Plums may be mentioned. The fruit-buds of Monarch had swollen generally by January 28. If they expand soon, it is all but certain that the blossom will be destroyed, and nothing but a severe and immediate check can save them. Early Cherries are in an equally precarious condition. Yet more forward are the buds of early Pears, but for some time after they burst only the clusters of closed blossom-buds will be exposed, so that there is more time for the chance of a check for this fruit than there is for early Plums or Cherries. One writer, however, says that the blossom of his early Pears opened some days before the end of January, and that it was destroyed by a frost. Currants and Apples have not made any dangerous advance at present in my orchards; but Gooseberry leaf-buds began to burst on February 6. An unimportant case of extreme earliness is that of a Quince tree in my garden, which was quite green with incipient leafage by January 30, and other trees of the same fruit in the borders of an orchard are almost equally forward. One of my men saw Almond trees in blossom on January 26, and another reports having seen some Morello Cherries in flower.

Since the preceding notes were written, a local nurseryman, writing on February 1, has kindly supplied me with the following interesting observations :—"Myrobalan has been in flower for more than a week. What strikes me as most extraordinary is the immense quantity of Prunus Pissardii flowers which have been coming out for about two weeks. Pear blossom has been fully out for several days, but not in quantity. Wallflowers, Polyanthuses, Vincas, and Pansies have been in flower since December. Azara microphylla, Spiræa Thunbergii, and Pyrus japonica in several varieties are fully out, also Cornus mascula and Prunus spinosa purpurea, the last a mass of white." If readers of these notes would supply similar information as to premature development in different parts of the country, the observations would be interesting, and those who have kept records might be able to state whether in any earlier season within their experience there has been any previous example of equally precocious vegetation to so wide an extent.

Why Not Stockholm Tar?

In reading directions in many quarters as to the treatment of canker, it has astonished me to notice the frequency of the advice to coat the wounds, after paring out the diseased patches, with lead paint or gas tar, both highly poisonous materials. What has Stockholm tar, a vegetable production, done that it should be ousted from its old position as the best stuff for the dressing of canker wounds?

A Bad Season for Digging.

The winter, up to the present time, has been one of the worst ever known for the digging of fruit plantations. There was so much to be done that the work had to be pursued in spite of the wetness of the soil, especially as the orchards were more weedy than usual after an unfavourable summer and a worse autumn for hoeing. The operation has been much more expensive than usual, and, unless hard frost occurs to disintegrate the soil turned over in wet and solid condition, the cost of hoeing in the spring will also be excessive. *A Southern Grower.*

SOLANUM CAPSICASTRUM "MELVINII."

This new variety of the popular "Winter Cherry" should prove a valuable plant both for market and home use. In America it is claimed to be one of the best winter plants yet offered, and it has won several medals and certificates. It was introduced as a seed novelty early last year by the Thos. J. Grey Co., of Boston, U.S.A., and the present writer secured seed for one or two English market growers to test. Owing to the delay in securing seed, this novelty did not have a full trial here last season. Market growers sow their Solanum seed early in January, whereas the seed of "Melvinii" did not come to hand until late in February. Further, the cold season was not favourable to Solanums, and nowhere were plants equal to the average.

"Melvinii," however, made good growth, and it proved a wonderfully free setter, the berries coming in clusters of three or four. These are conical, with quite a sharp apex, and a trifle less in size than the best strains of S. Capsicastrum. The colour is all that can be desired, and the fruit holds well. The foliage is narrower than the old form, rather crimped at the edges, and it is thought to be more persistent than in the ordinary variety of S. Capsicastrum now in cultivation. The growth is free, but less dense than the type, unless the habit was influenced by the late sowing and cool season. The plant illustrated in fig. 50 is one of a number grown by Mr Ward for the Covent Garden Market. *T. A. W.*

The Week's Work.

PLANTS UNDER GLASS.

By F. JENNINGS, Gardener to the Duke of DEVONSHIRE, Chatsworth, Derbyshire.

PROPAGATING. — Sow seeds of Eucalyptus Globulus, E. Gunnii, E. citriodora, Coleus, Celosia, Cyperus, Eulalia, Gloxinia, Grevillea robusta, Exacum macranthum, and E. affinis. Insert cuttings of Ruellia macrantha and Pleroma (cyn. Lasiandra) macranthum. The cuttings should be inserted in pots filled with suitable soil, and rooted in a close frame in an intermediate house. If the frame is provided with a little bottom heat it will be an advantage. As soon as the plants are rooted they may be potted singly into 3-inch pots, filled with a mixture of loam, peat, leaf-mould and sand, Grow the plants on a shelf in a warm house. If it is intended to train the Pleromas as standards the side-growths should be removed until the stem has attained a suitable height. In the case of bush specimens the leading growth should be stopped when it is about 9 inches long. As soon as the plants are well established they may be shifted into 6-inch pots, in which they may remain in the intermediate house during the summer, to flower next autumn and winter. Ruellia macrantha thrives best in a mixture of rich, fibrous loam, leaf-mould, well-decayed cow-dung, and bone dust. These plants also should be grown in an intermediate house through the summer months, and may be expected to flower well next December and January.

TUBEROUS-ROOTED BEGONIAS. — Shake the old soil from the roots and examine the corms. Extra fine varieties may be increased by cutting large plants in halves, dipping the cut surfaces in dry powdered charcoal, flowers of sulphur or both mixed. The plants should be potted into receptacles of a suitable size, using a compost consisting of rich loam and leaf-mould in equal parts, mixed with river or coarse silver sand and dried cow manure after it has been rubbed through a sieve: add a little soot and bone manure for the final potting. The plants should be started in a temperature of 60° in a propagating house or on a warm shelf in a vinery or plant stove. Afford no water at the roots for the present; the moisture from syringings will suffice until the corms have well started into growth. Seedlings raised in the autumn should be potted in similar soil to that recommended above and grown in a warm house or frame.

LAPAGERIA.—This beautiful greenhouse climber is usually seen at a great disadvantage in most gardens, being relegated to some out-of-the-way corner where insufficient space is available. The soil in which Lapagerias are planted needs to be prepared with care, and it is an advantage if the house faces north. Take out the soil to a depth of 4 feet and place at the bottom a layer 2 feet thick of broken bricks, &c., for drainage. Cover the drainage with good turves of loam or peat and place mounds of soil composed of good loam, peat, leaf-mould and coarse sand in equal parts, mixed with a liberal quantity of roughly-broken charcoal or, if this is not available, wood ashes. Plant the Lapagerias on the mounds, arranging the roots carefully, and well water the soil. Select the stronger growths and train them up the back wall, or roof for preference. The utmost care must be taken when the new shoots appear to protect them from damage by slugs and other insect pests by placing a band of cotton wool, some lime, sulphur, or soot, around the base of the growth. When grown in pots the receptacles should be well drained and filled with the compost recommended for use in borders.

CHRYSANTHEMUMS. — Large-flowering varieties should be inspected carefully for the presence of aphis and other insects. Much of the success with these plants depends on the treatment they receive in the early stages. They should be placed close to the roof-glass to keep the shoots sturdy, and plenty of ventilation should be afforded. Plants of bush varieties still in the cutting boxes or pots should be potted into 4½ inch pots. If plenty of cuttings are available two or three may be placed in each pot, as grown in this way they make better specimens. The potting soil should consist of good loam mixed with a small quantity of leaf-mould, river sand and wood ashes. Syringe the foliage frequently and admit only a little air for a few days after potting, to prevent flagging of the shoots.

CUTTINGS.—Insert cuttings of Linum trigynum, Justicia carnea, Goldfussia, Eranthemum pulchellum and Centropogon Lucyanus. The cuttings should be inserted in pots filled with a mixture of sifted loam, leaf-mould and plenty of sand. Place them in a close frame in an intermediate house provided with a little bottom heat.

FRUITS UNDER GLASS.

By JAMES WHYTOCK, Gardener to the Duke of BUCCLEUCH, Dalkeith Palace, Midlothian.

CUCUMBERS. — When the Cucumbers that were planted last month have reached the trellis work, the tops of the shoots should be pinched. This will cause laterals to grow, and of these only three should be retained at the top. As the plants grow they should be pinched frequently to provide plenty of growth for furnishing the trellis, but avoid overcrowding the foliage. Young Cucumber plants fruit freely, but the fruits should be thinned severely, as overcropping soon exhausts the plants. If the soil is of a light, open texture, it may be watered frequently. Do not syringe the foliage on dull days, but damp the walls and paths. On sunny days the house may be closed when the temperature is 80°, and on such occasions the foliage may be syringed. When the roots appear on the surface, top-dress them with a rich compost. The mean temperature of the house should be 70°, and at some time during each day air should be admitted for a short time.

EARLY FIGS.—Established trees that were started at the beginning of January are swelling their fruits, and care must be taken during cold, dull weather not to syringe the leaves or overwater the borders. A stagnant, damp atmosphere is as injurious as dry, arid conditions. Let the temperature be maintained at 60°, and keep the air constantly circulating. The temperature may be allowed to rise to 70° or 75° with sun heat, and on such occasions the trees may be syringed twice daily. If the border is restricted in size and filled with roots, the latter will need water frequently, but do not keep the soil wet and cold, as this would cause the fruits to fall. Figs in pots plunged in bottom heat are in full leafage. Stop the young shoots at the fourth leaf. The temperature of the house should be 65°, and the atmosphere kept sufficiently moist to keep down red spider. When the fruits of the second crop are apparent, feed the plants freely.

TEMPERATURES. — There have been great differences in the day and night temperatures, and, with so little sunshine, the work of regulating the temperatures in the houses has called for considerable caution.

EARLY VINES.—The vines are on the point of flowering, and ventilation must be afforded with great care, for whilst the mean temperature must be maintained at 65° a close, stagnant atmosphere is very injurious. Such early varieties as Black Hamburgh and Foster's Seedling set their berries freely, but it is well to draw the hand over the bunches when the pollen is ripe. Keep the atmosphere drier than usual at this stage, but still practise damping to counteract the bad effects of dry fire-heat.

SUCCESSIONAL VINERY. — The vines have made sufficient growth for the gardener to determine which shoots to leave and which to remove. On bright days when the weather is mild the vines may be syringed gently and the paths damped at closing time. The mean temperature should be 60° to 65°, but with sun heat it may rise to 75° or 80°. On cold nights and during sunless days it is better to maintain the lower temperatures than to resort to much fire heat.

LATE VINERY.—Push forward the work of cleansing and making ready for forcing late vineries. Vines pruned after this date should have styptic placed on the cut surfaces to prevent them bleeding. If the vines are infested with insect pests, such as mealy bug, they must receive a careful cleansing, treating the rods with a suitable insecticide.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir TREVOR LAWRENCE, Bart., Burford, Dorking.

ANGRÆCUM. — Plants of Angræcum sesquipedale that have finished blooming should be examined closely for the presence of scale insects, and a fluffy kind of mealy bug which sometimes infests the axils of the old foliage and the stems, principally at the base. Healthy foliage has a beautiful glaucous appearance, and unless it is absolutely necessary the leaves should not be sponged. Any plants that need repotting or resurfacing with fresh rooting materials should be attended to directly the new fleshy roots begin to develop. Specimens bare of leaves at the base should have the lower portion of the stem cut off and be repotted. Half fill the pots with large crocks, and on these place smaller crocks well intermixed with coarse Sphagnum-moss nearly to the rim, surfacing the whole with clean, freshly-gathered Sphagnum, and arranging it in the shape of a cone well up to the base of the leaves. The plant grows best in the East Indian house or the warm plant stove, but the foliage must be well shaded from direct sunshine. Although the roots require plenty of moisture, the Sphagnum-moss on the surface may be allowed to become moderately dry before more water is afforded. A constantly saturated rooting medium will cause the leaves to become spotted and diseased. Angræcum Leonis is in bloom. This sweetly-scented Orchid grows best when suspended on the shady side of the warmest house. The roots require plenty of water, but instead of dipping the pan in water it is better to keep the Sphagnum-moss moist by means of a fine rose can, lightly sprinkling the surface and around the sides of the pan or basket. The rare Angræcum Scottianum is of semi-scandent growth, and succeeds best trained to upright teak rafts or cylinders. The stems should be tied firmly to the raft, so that the small roots may have something substantial to cling to. Elevate the plant in a light position in a moist corner of the Cattleya house, and lightly spray the leaves overhead two or three times daily.

ODONTOGLOSSUM CITROSMUM. — Plants of O. citrosmum growing in the Mexican house have completed their season of rest, but they must not be unduly excited into growth, or their flowering may be adversely influenced. Rather keep the plants at the cooler end of the house, and if the pseudo-bulbs remain plump and healthy root waterings will not be necessary until the flower-spikes appear, when an abundance of moisture is necessary as well as occasional sprayings overhead. The inflorescence may be observed early if the plant is held up to the light. Immediately a spike protrudes through the growth a piece of wadding should be wrapped around it as a protection against slugs, woodlice, and other insect pests. If the plants have been rested so long that the pseudo-bulbs have become slightly shrivelled, do not afford an excess of water with the object of causing them to become plump quickly; it is better to wait until the time arrives for the flower-spikes to appear. Suspend or elevate the plants well up to the roof-glass.

THE HARDY FRUIT GARDEN.

By B. GOODACRE, Gardener to Sir ERNEST CASSEL, Moulton Paddocks, Newmarket.

RASPBERRY. — Suckers provide by far the quickest and most satisfactory method of increasing the Raspberry. If the work has not been completed already any new plantations that are required should be made without delay. Often the suckers appear at a considerable distance from the old plants, when their separation from the parents is an easy matter. With a sharp instrument make a clean cut and lift the suckers without disturbing the roots of the stock plants unduly. When the offsets develop close to the old canes great care must be used when they are dug up not to injure the buds, which are found near to the surface of the ground at the base of last year's growth, as these buds develop into the fruiting canes for the next year. The best system of growing Raspberries is in rows trained to a trellis. The rows should run from north to south, not closer than 4 feet apart, setting the plants 2 feet 6 inches apart in the rows. In some soils the Raspberry grows very freely, and this fact must be taken into account when

planting, for a free circulation of the air and the influence of sunlight are needed for the fruits to develop a high colour and rich flavour. The Raspberry grows best in rich, rather moist, open soils, but boggy land is not suitable. A liberal quantity of decayed cow manure should be mixed with the soil when it is trenched, and an extra layer of cow dung put in at the depth of 9 inches or 10 inches. The Raspberry is a somewhat surface-rooting plant, and the manure will assist in retaining moisture in the soil during dry weather, for drought is very harmful to the plants. When the planting is finished and the soil settled, apply a top-dressing of manure and allow it to remain as a mulch for the remainder of the season.

PRUNING THE RASPBERRY.—The fruiting-shoots are those of the previous year, and the stronger of these should be selected and tied to the trellis at a distance of from 4 inches to 6 inches apart. The weaker ones, together with the two-year-old canes, should be cut clean out. If the cane is not strong and well ripened its whole length it should be shortened to a plump bud. Any suckers not required for forming new plantations should be cut out with a sharp knife; they should not be pulled up, as this will injure the roots of the parent plants.

BRAMBLES.—The various Brambles may be propagated easily from seeds or by layering, the latter method being the most generally practised. If the shoot is cut so as to partly sever it and is then pegged into the ground, it will be well rooted in the autumn. The directions as to planting, soil, &c., suitable for the Raspberry apply also to Brambles. The plants require little or no pruning beyond the removal of old and deformed shoots, also surplus growths and side shoots.

THE FLOWER GARDEN.

By EDWARD HARRISS, Gardener to Lady WANTAGE, Lockinge, Berkshire.

SPRING-BEDDING PLANTS.—The beds furnished with spring-bedding should be examined, and gaps caused by plants having failed made good from the reserve garden. As soon as the ground becomes dry enough to permit of the work being done let the surface of the bed be stirred lightly with the Dutch hoe, and make firm any plants that have become loosened in the soil through the action of frost. Although the weather up to the time of writing has been unusually mild, severe frosts may occur at any time, and plenty of protective material should be at hand ready for covering the more tender subjects. The shoots are unusually soft, and certain of the plants are sure to be damaged if the weather turns very cold, unless protection is afforded.

DAHLIA.—Old roots which have been wintered in a cool, dry place should be arranged on a mild hot-bed in a heated pit and covered lightly with a mixture of loam and leaf-mould in equal parts. On bright days spray the plants lightly on one or two occasions to induce them to break freely into growth. When the shoots are of a suitable length for cuttings, they should be inserted singly in small pots filled with a light, sandy compost. Plunge the pots in a hot-bed in a close pit, and shade the cuttings from bright sunshine until they have formed roots, when they may be exposed gradually to strong light and more airy conditions. As soon as the plants have filled their pots with roots, shift them into larger receptacles, and harden them gradually preparatory to placing them in cold frames. The stock may also be increased by division of the roots, but in this case the old stools should be allowed to remain in their winter quarters until the middle of March. Single Dahlias may be propagated readily from seeds which may be sown now. Fill the seed-pans with light, sandy soil that has been passed through a fine sieve. Sow the seeds thinly, and when the seedlings are large enough to handle pot them singly in small pots. Their subsequent treatment should be the same as advised for cuttings.

CANNA.—The old stools of Canna should also be removed from their winter quarters, and, whether it is desirable to increase the stock or not, they should be divided, and suitable portions potted up singly in receptacles of a convenient size. They may be planted in boxes, but pots are best, unless space indoors is limited. If the plants are placed on a moderately-warm hot-bed they will soon grow actively. When they have reached a suitable size they should be hardened off gradually.

BORDER PHLOXES.—The different varieties of Phlox decussata may be increased readily by means of cuttings or division of the root-stocks. Plants raised from cuttings inserted last autumn may, if they are well established, be planted out-of-doors at any time when the weather is favourable. Old plants should be lifted, and suitable portions replanted afresh every two or three years, in ground that has been dug deeply and manured heavily. Beds which will not be disturbed this season should be dressed with well-decayed manure and soot, forking the materials lightly into the soil.

MONTBRETIA.—Corms which were dug up in the autumn and wintered in boxes in a cold frame have made a considerable amount of growth, and it will be advisable to plant them where they are required to flower. Grade the corms, planting the smaller ones in the reserve garden. The Montbretia grows best in light, rich, loamy soils.

THE KITCHEN GARDEN.

By JOHN DUNN, Foreman, Royal Gardens, Windsor.

CELERY.—A small sowing of Celery may be made now to provide plants for early supplies. Sow the seeds in boxes, and stand the latter in a pot provided with gentle bottom heat until the seedlings are through the soil, when they should be placed near the roof glass to keep the plants stocky. Transplant the seedlings when they are large enough to handle in boxes of fine soil, and keep the house closed for a few days; afterwards admit air freely in mild weather. Never allow the plants to suffer from dryness at the roots, but endeavour to grow them steadily and without a check until the time for planting arrives. Early Rose is one of the best early varieties.

CUCUMBERS.—If seeds were sown early in January, the plants should be ready for planting. The house should be cleansed thoroughly, and the walls washed with hot lime. A little sulphur may be burned in the house to destroy insect pests which may have escaped destruction in the cleansing operations. Place the hot-bed in position, and on the top of this arrange small mounds of light, rich soil at 4 feet apart. When the soil is warmed through, planting may be done, covering the ball of old soil lightly. When roots make their appearance through the compost, cover them with a light top-dressing, and do this as often as they appear. It is important that the plants should be exposed fully to the light, but not to an excess of direct sunshine. Promote plenty of atmospheric moisture, or red-spider may prove troublesome. A night temperature of 70°, rising to 85° by day with sun heat, will be suitable. Plants in bearing should be divested of all decaying foliage, but very little stopping of the shoots will be necessary. Top-dress the roots whenever they appear above the surface of the bed with a compost of three parts sandy loam and one part leaf-mould. Very little air will be necessary during the spring months: the ventilators should never be opened with a view of lowering the temperature.

PEAS.—Make a sowing of early Peas in a warm, sheltered situation, choosing round-seeded varieties, which are not so liable to be affected by cold, wet conditions as the wrinkled sorts. The crop should be ready about the middle of June. If the situation is a cold one, and the soil not in the best possible condition, defer the sowing of wrinkled Peas until the middle of March. The Pilot is one of the best varieties for present sowing. Allow a distance of 5 feet between the rows, but if dwarfed varieties are selected, the rows should be 1 foot wider than the height of the plants when they have completed their growth. The plants sown early in January are well through the ground, and must be protected from cold winds, which may be done by placing the sticks in position, and then arranging branches of Spruce Fir along the rows.

CABBAGE.—The rows of autumn-planted Cabbages should be examined carefully and, where the plants have failed, they should be replaced with others from the reserve bed. Hoe the soil between the rows and afterwards sprinkle the surface with soot and lime as a deterrent to slugs. If any of these autumn-sown cabbages have not been transplanted, they should be set out in rich ground to furnish heads for a succession. The plants will prove very useful, and will allow the cultivator to clear the ground of all stumps of the earliest plants as soon as the greens are cut. Make a sowing of some suitable variety of early Cabbage to provide plants for setting out in the vegetable quarters in May. As soon as the seedlings are large enough to handle, transplant them on a warm border at a distance of 4 inches apart.

THE APIARY.

By CHLORIS.

PURCHASING SWARMS.—Many erroneously imagine that swarms of bees may be purchased and sent off by a certain train on a particular day like an ordinary parcel of goods. To fulfil an engagement to supply bees at a given time sellers often injure their best colonies to give a "shook" swarm, and in this way lose by the transaction, whilst the purchaser does not benefit. Buyers should place their orders early, and be satisfied if the bees are dispatched in rotation; but they should insist on receiving natural swarms.

QUEENS.—The bee-keeper's most active season will soon be here, and it will be well for him to make his plans in advance. As much of the success will depend upon the queen, some little consideration should be given to her needs. Each time a hive is opened in the early season a close watch should be kept upon the brood nest to see that the patches of brood are compact, and that the sealing is good and healthy-looking. Always be suspicious of disease being present. Later, note whether the brood is extending fast or slowly. If it progresses at a satisfactory rate it may be known that the queen is a good one. Many third-year queens give excellent results, and prove superior to queens one year their junior. From this it will be seen that to judge a queen by age only is a great error. When young queens are hatched and fertilised in the spring, the old queens should not be destroyed by rule of thumb, for it may be wiser to leave her for a third season and to destroy the younger ones.

SEASONABLE WORK.—February and March are the most critical months of the dormant season, and especially in very mild seasons. It is undesirable to disturb the bees except in cases of dire need, for it is still the season of rest; but ample food and warmth are necessary. Stocks that were weak last autumn will not live unless they are well protected from the weather. If they are not too weak, and are headed by a prolific queen, they may develop into a profitable colony in the spring. Where possible, hives containing such colonies should be packed with dry hay, sawdust, dry leaves, chaff or cork dust, after a sufficient quantity of soft candy has been placed under the lowest quilt. See that the roof is quite water-tight. It does not need any expert to detect a strong colony, for these can be noted by the vigorous flight of the inmates when taking cleansing flights on mild days. Breeding has commenced, and beginners are sometimes alarmed because there is a little moisture on the quilts; but this is conducive to success, and is not the result of dampness. Add extra quilts, and all will be well.

DAMPNESS.—Colonies in leaky hives that are very wet should be transferred to clean, dry hives as soon as the weather permits.

FOOD.—No stimulating food—i.e., liquid food—may yet be given, because if a spell of cold weather follows, even for only a few days, it will cause the cluster of bees to contract, and the brood in the outside combs will become chilled and die, as well as a few of the older bees on the outside of the cluster. These often fall to the floor-board, and being dragged to the entrance cause it to become blocked. For this reason the entrances should be watched closely, especially after periods of cold, so that the floor-boards may be kept clear of dead bees. Failing a comb of good, sealed honey, only good candy should be used

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS, 41, Wellington Street, Covent Garden, London.** *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

APPOINTMENTS.

TUESDAY, FEBRUARY 18—
Roy. Hort. Soc. Coms. meet. (Lecture at 8 p m. by Miss Mason, on "Some Flowers of Eastern and Central Africa.") Roy. Inst. meet. (Lecture by Prof. W. Bateson.)

WEDNESDAY, FEBRUARY 19—
North of Eng. Hort. Soc. Ann. Meet. and Sh. at Leeds. Roy. Meteorological Soc. meet.

THURSDAY, FEBRUARY 20—
Linnean Soc. meet.

FRIDAY, FEBRUARY 21—
Madras Agri-Horticultural Soc. Sh. (2 days).

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich—39·5.

ACTUAL TEMPERATURES:—
LONDON.—*Wednesday, February 12* (6 P.M.) Max. 47°; Min. 37°.
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—*Thursday, February 13* (10 A.M.): Bar. 30·1°; Temp. 41°; *Weather*—Dull.
PROVINCES.—*Wednesday, February 12:* Max. 46° Barnstaple; Min. 43° Spalding.

SALES FOR THE ENSUING WEEK.

MONDAY AND WEDNESDAY—
Rose Trees, Perennials, Shrubs, Bulbs, &c., at Stevens's Auction Rooms, 38, King Street, Covent Garden, at 12.30.

MONDAY AND FRIDAY—
Herbaceous Plants, Perennials, Lilies and Hardy Bulbs, at 12; Roses and Fruit Trees, at 1.30; at 67 and 68, Cheapside, E.C., by Protheroe and Morris.

WEDNESDAY—
Miscellaneous Bulbs and Roots. at 11; Hardy Bulbs and Liliums, Perennials, Herbaceous Plants, &c., at 12; Japanese Liliums, at 2.30; Palms and Decorative Plants, at 5; at Protheroe and Morris's Rooms.

THURSDAY—
Roses and Fruit Trees, at 1, at Protheroe and Morris's Rooms.

FRIDAY—
Orchids, at 12.45; at Protheroe and Morris's Rooms,

The Royal Horticultural Society.

There are moments when the men who do things and care nothing for the credit of doing them must suffer with good grace the publicity which they fain would shun. The present is such a moment, and the men whose achievements all horticulturists are united in applauding are the president and the secretary of the Royal Horticultural Society. Both men have served the Society for many years, and both have contributed in a prominent degree to the present condition of success which the Society enjoys. It so happens that at the moment when we are all engaged in offering to the Rev. W. Wilks congratulations on the work that he has done during the 25 years of his secretaryship the announcement comes to us that the captain under whom he has served is about to resign his command. This announcement, made at the annual meeting of the Royal Horticultural Society, will be received with universal regret and with respectful acquiescence. Sir Trevor Lawrence has come to the conclusion that his great age is a bar to his continuance in the high office which he has filled for so many years with firmness, dignity, and conspicuous success. Mindful of the interests of the Society, Sir Trevor has announced the fact of his impending resignation, and thus gives time to the Council for the performance of the difficult task of securing a successor to the office of president.

Of the services he has rendered there is no need to speak: they are universally recognized, and the emotion with which he announced his decision will be shared by all. The president has filled his office for nine-and-twenty years. He has taken a leading part in not only shaping, but also in guiding the policy of the Society, and now, at the great age of 82, he will enjoy, as we hope for long years yet, "love, honour and obedience, troops of friends, and all that should accompany old age."

The Council has before it a matter of serious moment, and upon its wise discretion will hang the fortunes of the Society, but it is satisfactory to know that in the step that has to be taken they will have the wise counsel and advice of a president who, during many long and strenuous years, has succeeded in keeping the full confidence of the horticulturists of this country.

The announcement made by Sir Trevor Lawrence, and published in our last issue, that steps were being taken to commemorate the Rev. W. Wilks's services to horticulture has been received with unanimous approval. In presenting to Mr. Wilks his portrait, the Victorian Medal of Honour, and an engraved silver salver, Sir Trevor bore generous tribute to the resourcefulness, tact, and energy displayed by the secretary during the past quarter of a century. Mr. Wilks has told us already the circumstances attending his appointment, and it is common knowledge that the Royal Horticultural Society has since made such progress as is unequalled by any scientific society in the world. We need not attempt to apportion the credit for the successful navigation of the horticultural ship. There have always been found good friends to help the executive officers, and probably no society has ever been afforded a larger measure of support and personal service than has the Royal Horticultural Society; but when all this is allowed for, it is to the credit of the principal officers that the ship has been so navigated that it has taken the fullest advantage of fair weather and favourable winds. We are convinced that all members of the Society will feel that when Mr. Wilks claims one-thousandth part of the credit for the success achieved, he errs altogether on the side of modesty, and they will hope that the Society may be fortunate enough to retain his services for many years to come.

An Inverted Hyacinth.

A correspondent sends a specimen of a Hyacinth growing in an inverted position—the bulb in the air and the tops of the leaves in the soil.

The specimen offers a curious illustration of the well-established facts with respect to the behaviour of plants to the stimulus of gravity. A brief recapitulation of these facts will provide the clue to explanation of this topsy-turvy bulb. Those members of a plant which grow vertically upward or downward do so by responding to the stimulus of gravity. If such members find themselves out of the vertical or "rest" position they respond to the gravitational stimulus by growing more on one side than the other. As a result of this unequal growth, the member curves and continues to curve until its tip points once again vertically upward—in the case of a stem—or vertically downward—in the case of a root. Thus it is easy to picture what will happen if a root finds itself diverted slightly from its vertical path. The growing part begins to curve in such a way that the upper side is convex, and hence the tip is brought to point once again vertically downward. As soon as this happens, the sides of the growing region cease to grow at unequal rates, and hence the tip is maintained in its vertical or "rest" position. There are, however, two positions in which a root is at rest in the sense of not responding to the stimulus of gravity. These positions are: one in which the root points downward, and the other in which the tip points upward. The latter position, like the former, is a rest position, and a root upside down with its tip pointing vertically upward can make no response to gravity, and if it could be prevented from falling to one side or the other it would continue to grow upward, that is, away from the centre of the earth.

The Hyacinth bulb is in like case, the tips of the leaves pointed vertically downward. They were incapable of responding to the stimulus of gravity. The bases of the leaves continued to grow, and the pressure set up by their elongation met with less resistance from the bulb than from the tips which were wedged tightly in the soil. The bulb therefore was forced upward into the air.

Coloured Plate.—Ipomaea rubro-caerulea, the blue Mexican Bindweed, is one of the best of sub-tropical annual climbers, but, like many other good old garden plants, it is very little grown, probably because of the belief that it can only be successfully cultivated under greenhouse conditions. There are many greenhouses and conservatories in which such a plant would make a beautiful display and give little trouble, which is a very good reason for its inclusion among the plants selected for coloured plates in these pages. Except in the colour of its flowers and in the absence of floral bracts, there is little difference between the plant here figured and the common Bindweed of the hedgerows. Of course, the latter species has a perennial root-stock, as many a farmer and gardener knows to his cost. Still, to the casual observer, the characters of Ipomaeas and of the Convolvuluses are much alike. It is as well to emphasise this fact so as to make it clear to gardeners that the plant now under notice is not only a Bindweed in appearance, but it is also one in habit and requirements. In the issue for August 12, 1911, p. 112, Mr. WYNDHAM FITZHERBERT recorded his success with I. rubro-caerulea in the open garden in South Cornwall. He sowed seeds of it in pots in a warm house in May, hardened off the seedlings when they were 6 inches high, keeping them in a cool greenhouse till the end of June, and then planting them in a light, rich soil at the foot of a south-west wall. Here they grew up wire supports to a height of 10 feet, branched freely and bloomed splendidly, from 40 to 50 blossoms expanding

very morning from the second week in July until late in September. This result was obtained in five successive years, a wet summer making little difference. Cornwall is somewhat favoured climatically; still, the summer weather here is no better than in many other parts of the United Kingdom, where Mr. FITZHERBERT'S method may very well be tried. A position sheltered from wind and not too open to full sunshine would appear to be essential; for supports, Pea sticks ought to serve better than a wall and wires. Or the plants might be planted in June at the base of a loose shrub over which the shoots could twine. Where I. rubro-caerulea is grown under glass, the seeds are sown in June, and the plants are shifted on into pots, their final shift being into pots 8 inches in diameter. The shoots are either trained over a balloon trellis or along wires under the roof of the greenhouse. They begin to flower early in autumn, and usually continue to bloom until mid-winter. The arch-enemy is red spider, which soon spoils the plants if not destroyed by frequent use of the syringe. When the flowers are fading they change to a purplish-pink colour. We remember seeing I. rubro-caerulea in grand condition in the Water Lily House at Kew, the plants having been allowed to grow over the wires supporting the gourds and other climbers, and in the autumn there were hundreds of lovely caerulean-blue flowers open together.

ROYAL HORTICULTURAL SOCIETY.—The next meeting of the Committees will be held on the 18th inst. in the Vincent Square Hall, Westminster. At the three o'clock meeting in the lecture room Miss MASON will give an address on "Some Flowers of Eastern and Central Africa."

———A cup, value 50 guineas, has been presented to the Society by Lady ALGERNON GORDON-LENNOX, for competition by amateurs at the Holland House Show on July 1 for a collection of hardy perennial and biennial border plants, including bulbs, tubers, and rhizomes. Dwarf shrubby plants such as certain Ericas, Helianthemums, Pentstemons, and Dianthus are eligible, but half-hardy plants such as Dahlias are excluded. The winner will hold the cup for one year, and on returning it will receive a small memorial cup of similar design. The object of this competition is to draw attention to the most desirable hardy border flowers, exclusive of annuals, Roses, and flowering shrubs, though certain very dwarf-growing shrubby plants, like the old Clove Carnation, for example, may be included in the term "hardy border plants." The same exhibitor may only win the cup once in three years, but should the winner of the previous year be again placed first the Council will bestow a special award. The Council will not award this high distinction unless satisfied and assured that the exhibit is, in the main, due to the work and capability of the exhibitor or his employees; on this point the Council may consult any expert not eligible to win the cup. A Dahlia competition will be held in conjunction with the R.H.S. fortnightly meeting on September 23. The object of this competition is to discover the most decorative garden Dahlias, that is, those varieties which add most to the beauty of the garden. The schedule is as follows:—Class A (amateurs)—Decorative garden Dahlias of any section except Show Dahlias, which are excluded. The exhibit to occupy 12 feet run of 3 feet tabling, not exceeding 8 feet in height. The first prize consists of a silver cup, to which will be added the Veitch Memorial Medal. The Council will make other awards according to merit. Class B (open)—For decorative garden Dahlias of any section except Show Dahlias, which are excluded. The exhibit to occupy 25 feet run of 3 feet tabling, not exceeding 8 feet in height. A 75 guinea challenge cup, presented to the R.H.S. by Mr. REGINALD CORY, is offered for the best collection, and the Council will make other awards according to merit. The cup will be held for one year and on its return the Council will present the holder with a small cup of similar design. The other conditions are the same as in the Gordon-Lennox Cup competition.

R.H.S. TULIP SHOW.—The Society will hold a special show of Darwin, May-flowering and cottage Tulips at the meeting on May 14. They will be considered by a special jury, and the Council will make awards according to their recommendation. Six classes for amateurs have been arranged, and a small private committee is raising the money prizes, for which the committee alone is responsible. The Council will also give prizes and awards at their discretion.

SIR JOSEPH HOOKER LECTURE FUND.—The Council of the Linnean Society have had under consideration the application of the bequest of £100 left to the Society by the late Sir JOSEPH HOOKER. They feel that the Fellows of the Society would not desire this legacy to be applied to the ordinary purposes of the Society, but that they would wish it to be used for some memorial of the illustrious donor in connection with the Society. Such a memorial would be peculiarly appropriate, since the late Sir JOSEPH HOOKER was for nearly 70 years one of the strongest supporters of the Society, taking the keenest interest in its work. The Council have agreed that the most suitable memorial would be an adequately endowed Sir JOSEPH HOOKER Lecture, to be delivered every second, third, or fourth year, and to be published in the "Proceedings" of the Society. They propose that the lecture be on some subject especially associated with the name of Sir JOSEPH HOOKER, and that the lecturer be appointed by the Council, not necessarily from among the Fellows of the Society. They suggest that the generous bequest of £100 should form the nucleus of a fund to be raised for the purpose of carrying this proposal into effect. The Council consider that a total sum of not less than £600 should be obtained, and confidently appeal to the Fellows of the Linnean Society and others to contribute.

GIFT OF ORCHIDS TO KEW.—We learn that Sir GEORGE HOLFORD, on being informed that a new Cattleya house had been built at Kew, generously presented to the gardens a large number of species and hybrids from his collection at Westonbirt. Included in the gift were many specimen plants of Brasso-Cattleyas, Lælio-Cattleyas, and other hybrids, also a number of hybrid Cypripediums and Cymbidiums. It will give some idea of the value of the gift if we repeat what we were told by Mr. F. SANDER, who had seen the plants selected for Kew before they left Westonbirt. Questioned as to their value, he stated that, if the plants had been purchased in the open market, they could not have been bought for less than £500. It is particularly gratifying to find that the national collection of plants is not overlooked by the great owners of private collections. Kew does much to foster a love of horticulture among the people, and the gift of Sir GEORGE HOLFORD is certain to be greatly appreciated by the thousands who visit those popular gardens.

ROYAL METEOROLOGICAL SOCIETY.—A meeting of the Royal Meteorological Society will be held at the Surveyors' Institution, 12, Great George Street, Westminster, on Wednesday, the 19th inst., at 7.30 p.m., when the following papers will be read:—1, "Periodical Variations of the Velocity of the Wind at Oxford," by W. H. ROBINSON; 2, "Rate of Ascent of Pilot Balloons," by J. S. DINES, M.A.; 3, "Meteorological Conditions in a Field Crop," by W. LAWRENCE BALLS, M.A.

WILFUL DAMAGE AT KEW GARDENS.—Last Saturday morning, between 1 and 4 a.m., some persons broke into the gardens, and, by removing the glass from a door panel, obtained entrance to the Orchid houses, where they smashed and mutilated plants, broke the glass in the side lights of the houses, and, leaving a card on which was written "Votes for women," together with two blood-stained handkerchiefs, and a bag containing iron bolts, got away without detection. The weather favoured the raid, for the wind blew half a gale and there was heavy rain all night. The extent of the damage was estimated at about £150, including some £4 worth of glass. Fortunately there was no frost, otherwise the loss of plants would have been much greater. The plants, which were either torn to pieces or smashed down, were chiefly Cattleyas, Odontoglossums, Dendrobiums, Cymbidiums, Cypripediums, Cœlogynes, Lycastes, Phalænopsis, and Anœctochilus. Most of them were in flower, and, therefore, were most easily seen in the dark. The entire collection of Anœctochilus, a particularly good one, was broken into fragments. The new Cattleya house was not entered, so that the magnificent gift of Sir GEORGE HOLFORD was not mutilated. Had the raiders known the comparative value of the Orchids, they might easily have done ten times the damage in the time; as it was, the most valuable plants in the collection escaped injury. Altogether 136 plants were either destroyed or damaged. The mischief was discovered by the night stoker at 4 a.m., and he at once called the policeman who was on night duty, who summoned the foreman and the Curator. Before noon, when the public were admitted into the gardens, the glass had been repaired and all evidence of the damage removed.

ABBOTSBURY CASTLE DESTROYED BY FIRE.—The news of the destruction by fire, on February 8, of MARY Countess of ILCHESTER'S beautiful residence at Abbotsbury, Dorsetshire, has been received by horticulturists with profound regret. A good friend of horticulture, the Dowager Countess of ILCHESTER has placed all gardeners under a lasting debt of obligation by her generosity in lending the grounds of Holland House for the summer shows of the R.H.S. She possesses at Abbotsbury a singularly attractive garden, which was described and illustrated in the issue for August 19, 1899, and the personal interest which she takes in horticulture is also evinced by the exhibits of choice plants which she makes frequently at the meetings of the R.H.S.

EDINBURGH ROYAL BOTANIC GARDEN'S EMPLOYÉS.—The annual supper of the members of the Edinburgh Royal Botanic Garden Cricket Club was held in Milne's Hotel, on the 7th inst. Dr. BORTHWICK occupied the chair, and the company numbered about 60. A committee was formed to consider the formation of a guild of past and present employés of the gardens.

BOSKOOP ROSE SHOW.—We have received the following communication regarding the Rose show which will be held in Boskoop, Holland, during July, under the patronage of the Dutch Minister of Agriculture, Industry and Commerce. The committee has been obliged to greatly extend the grounds of the Exposition, owing to the large number of exhibitors. A pergola 600 feet long will be built around the rosary which will cover about an acre. This pergola will be furnished with 3000 climbing Roses, which have been grown in pots for this purpose. In the background of the rosary will be erected an Italian flora temple 120 feet broad and 15 feet high. The competition for new Roses not yet in commerce will be open to all growers. The secretary is Mr. S. J. RUIZEVELD, Boskoop.

SOUTH-EASTERN AGRICULTURAL COLLEGE.—A meeting of the Governors of the Wye Agricultural College was held at Caxton House on Monday. The Right. Hon. Lord ASHCOMBE was re-elected chairman and H. E. H. RICE, Esq., was elected vice-chairman, in succession to Mr. F. S. W. CORNWALLIS. The Principal, Mr. J. R. DUNSTAN, reported that 162 students were in attendance at the college. The Governors approved of the purchase of 22 acres of land situated at Malling for the fruit research station, and it was also decided to institute during the summer a course of specialised instruction in entomology and mycology for county instructors of horticulture, towards the cost of which the Board of Agriculture would be prepared to make a grant.

EXAMINATION OF PUBLIC PARK EMPLOYÉS.—The R.H.S. examination of employés in public parks was held no January 6, in the Society's Hall, Vincent Square, and the list of successful candidates shows that 30 secured places, there being 10 passes in the first class, 14 in the second, and 6 in the third. The examination was partly viva voce and partly written, and it occupied three hours and 20 minutes. The examiners report that the answers in the viva voce section were, generally, above the average, but the written answers fail to show any marked improvement.

VIENNA HORTICULTURAL SOCIETY. — Dr. KURT SCHÉCHNER has been appointed general secretary and director of the Vienna Horticultural Society, and director of the new experimental station at Esslingen, near Vienna. Herr FRANZ FROLIK is to be garden inspector at the station, and Herr ANTON KOROUS head gardener.

PRESENTATIONS TO GARDENERS. — Mr. THOMAS YOUNG, gardener at Belvoir Park, Belfast, was entertained at dinner by the other members of the garden staff and friends on the occasion of his leaving Belfast recently upon taking up a situation at the Shandon Hydro. Mr. WILLIAM LITTLE, until recently gardener to Mr. RICHARDSON, Ballendrick, has received presents from his friends and late employer on the occasion of his leaving Ballendrick to take up an appointment under the Carnegie Dunfermline Trust.

FLOWERS IN SEASON.—Messrs. PENNICK & Co,. Delgany, near Dublin, have forwarded a box containing flowering sprays of the following plants, which are at present blooming in the open at Delgany :—Eupatorium Weinmannianum, Sphacelia Lindleyana, Veronica buxifolia, Daphne Mezereum, Veronica imperialis, Genista tinctoria, Acacia pinifolia, Erica carnea, Vinca major, Arbutus Milleri, Rhododendron Nobleanum, R. Russelianum, Cytisus monspessulanus, Sollya heterophylla, Jasminum nudiflorum, Genista fragrans, Veronica Andersonii, Garrya elliptica, Helianthemum Rose Queen, Prunus Pissardii, Veronica Autumn Glory, Olearia stellulata, Prunus Miqueliana, Escallonia exoniensis, Clianthus puniceus, and Cheiranthus alpinus.

GAGE PLUMS.—Timely and sound advice is given in the *Field* (January 25, 1913) on the selection of varieties of Plums for planting. The writer points out that the Plums often grown in gardens are among the poorest of their kind, and recommends the replacement of inferior sorts by good varieties, and among others, Gages such as Transparent. Among those which he recommends are Early Transparent, Rivers' Golden and Rivers' Late, Oullin's Golden (a good keeper), Bryanston Gage and Guthrie's Late Green. Special commendation is given the variety Coe's Golden Drop, which, although not a Gage, deserves to be planted widely. It is, however, self-sterile, and must therefore be planted among other varieties.

HONOUR FOR MESSRS. ADNITT AND NAUNTON.—In recognition of their 28 years service as joint honorary secretaries of the Shrewsbury Show, the Council of the Royal Horticultural Society have appointed Mr. H. W. ADNITT and Mr. W. W. NAUNTON Honorary Life Fellows of the Society.

NYASSALAND PROTECTORATE.—The Board of Trade *Journal* announces that it has received a copy of *The Plants Protection Ordinance*, 1912, the object of which is to prevent the dissemination of insect and other pests into the Nyassaland Protectorate. A copy of the Bill on which the *Ordinance* is based was published in the Board of Trade *Journal* on October 31, 1912.

TO INCREASE THE SUGAR-CONTENT OF MAIZE.—There are many obvious facts, the practical bearing of which takes a long time to become appreciated. For example, as everybody would expect to be the case, the removal of the inflorescences from Maize and Sorghum results in an accumulation of sugar in the vegetative tissues. Mr. E. HECKEL, who has made experiments on this subject, finds that the amount of sugar in the vegetative tissues may be almost doubled by the simple process of removing the female inflorescences. As is pointed out in the *Pharmaceutical Journal* (February 8, 1913), the observation is of commercial importance, particularly in the case of Sorghum, of which plants agriculturists have long sought a means of increasing the sugar-content.

PUBLICATIONS RECEIVED.—***Notes from the Royal Botanic Garden, Edinburgh.*** (December, 1912.) Price 9d.—***The North of England Horticultural Society's Monthly Magazine.***—***Insecticides, Fungicides and Weed-killers.*** Translated from the French of E. Bourcart, D.Sc. (London: Scott, Greenwood & Son.) Price 12s. 6d. net.—***University of California Publications.*** Commercial Fertilisers, by John S. Burd; Hog Cholera and Preventive Serum, by F. M. Hayes; Enological Investigations, by Frederic T. Bioletti and William V. Cruess; Three Years' Work of the Ferndale (Humboldt County) Cow Testing Association, by Leroy Anderson. (Berkeley, California: Agricultural Experiment Station). — ***Thirty-seventh Annual Report of the Board of Commissioners for the year ending January 31, 1912.*** (Jamaica Plain, Mass.: The Board of Park Commissioners of Boston, U.S.A.)—***Injurious Insects: How to Recognise and Control Them,*** by Walter C. O'Kane. (New York: The Macmillan Company.) Price 8s. 6d. net.—***Mendel's Principles of Heredity,*** by W. Bateson, M.A. (Cambridge: University Press.) Price 12s. net.—***The Art and Craft of Garden Making.*** Fourth edition, by Thomas H. Mawson. (London: B. T. Batsford.) Price £2 10s. — ***Transactions of the Edinburgh Field Naturalists' and Microscopical Society.*** Secretary, Mr. Allan A. Pinkerton, Edinburgh. — ***The First Book of Rural Science,*** by J. J. Green, B.Sc. (London: Macmillan & Co., Ltd.) Price 1s. 6d. — ***Journal of the National Poultry Organisation Society, Limited.*** Secretary, Edward Brown, Dean Farrar Street, Westminster, London. — ***Colonial and Foreign Statistics.*** (London: Board of Agriculture and Fisheries.) Price 7½d.—***Trees in Winter,*** by Albert Francis Blakeslee, Ph.D., and Chester Deacon Jarvis, Ph.D. (New York: The Macmillan Company.) Price 8s. 6d. net. — ***Garden Work for Every Day,*** by H. H. Thomas. (London: Cassell & Co., Ltd.) Price 1s. net.—***Cassell's Dictionary of Practical Gardening.*** Edited by Walter P. Wright. Part I. (London: Cassell & Co., Ltd.) Price 7d. net.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

THE ABNORMAL WINTER.—You will hav received many lists of plants in flower showin the forwardness of the season. It is a forwar season, and the garden is delightfully full o flowers. But I have known more forward season I can remember a year in which the out-of-doo Peaches had fully-open flowers at the end o January. That is not so this year, and I think i is well worth noting how many flowers are reall backward. I have not picked a single flower o Iris stylosa (except white ones) or I. reticulata All the buds of Azara Gillesii have fallen; ther are no flowers of any Hamamelis or Parrotia and the two species of Scopolia, which generall lead the way, are not yet above ground Still it is a season in which the gardener ma rejoice and be thankful. *Quid sit futurum cra fuge quærere. H. N. Ellacombe, Bitton Vicar age, Bristol.*

SALE OF BOOKS. — Under this heading i *Gardeners' Chronicle*, December 21, p. 472 the prices were given of a number of th principal works sold on December 2, 3, and 4 Other valuable horticultural works sold a the same time were Curtis's *Botanica Magazine or Flower-garden Displayed*, 74 vols. 1787-1912, £83; J. Sowerby, *English Botany* 36 vols., coloured plates, 1790-1814, £8 10s. Robt. Sweet, *Geraniaceæ*, 5 vols., coloure plates, 1820-30, £11 10s.; *Loddiges' Botanica Cabinet*, 20 vols., 2,000 coloured plates, 1818-33 £31; G. Maw, *Monograph of the Genus Crocus* 66 coloured plates, 1886, £5 7s. 6d.; *Orchi Album*, conducted by R. Warner and B. S Williams, coloured plates, 11 vols., 1882-97 £12 15s.; *Paradisus londinensis*, by R. A. Salis bury, figures by W. Hooker, 1806, £6 5s.; C. L Blume, *Rumphia, sine Commentationes Botanic imprimis de Plantes India Orientalis*, over 20 coloured plates, 1835-48, £7; *Lindenia Iconography of Orchids*, conducted by J. Linden, and others, 11 vols. in 6, 1891-96, £8 5s.; F. Sander *Reichenbachia, Orchids Illustrated and De scribed*, coloured plates, 4 vols., 1888-94, £10 5s. R. J. Thornton, *Temple of Flora*, coloured plates, 1799, £6 6s.; N. Wallich, *Plantæ Asiaticæ rariores Descriptions and Figures of Unpublished Indian Plants*, 300 coloured plates, 3 vols., 1830-32, £8 10s. *Hortus Siccus.*

THE VALUE OF CORSICAN PINE.—Mr. Elwes's wholesale condemnation in the *Gardeners' Chronicle* of January 18 of the commercial value of Corsican Pine will not, I hope, be endorsed by every planter. Mr. Elwes complains that the timber of this tree requires over a hundred years to mature; but is it necessary for the planter of to-day to study to any great extent the ripening of the species he plants? We know that well-ripened timber is worth more than young, immature wood; but I doubt very much whether the market value of timber 50 years hence will be governed by its maturity to anything like the extent it is now. With most species at the present time the average seller finds it difficult to get any higher prices per cubic foot for increased quality due to age or maturity than he gets for timber of the same size which has not reached an age at which the maximum of heart wood has been produced. Straight growth, a minimum size, freedom from knots, &c., are qualities which will probably satisfy the timber users of the future in most cases, not because they are the only qualities worth considering, but on account of the impossibility of obtaining any large quantity of old timber similar to that which is now being secured from natural forests still unexhausted by overcutting. If this should prove to be the case, I do not see why Corsican Pine should not be as profitable a tree for planting on the drier soils of most parts of the country, and on sites too exposed for Douglas Fir, &c., as any Conifer. Its rate of growth is from 25 per cent. to 50 per cent. greater than that of Scots Pine, and it produces far cleaner timber under the same conditions. As regards the difficulty of transplanting, this is, I am certain, very largely a point which must be dealt with according to local experience. In the drier and warmer parts of the country, autumn or even winter planting may prove as successful as spring; but far more

important than the actual date, in my opinion, is the care bestowed upon the lifting of the plants. If the roots are skinned by being roughly pulled out of the ground, or exposed to sun and wind for any length of time, failures are sure to be numerous, and the same result will follow if plants are allowed to stand for more than one year in the nursery previous to planting out. The best results are obtained by the use of 1 yr. 1 yr. 1 yr. plants, provided they are kept clear of rubbish, grass, &c., during the first two years. In wet districts and in damp soil planting just as the buds begin to lengthen out in spring usually gives the best results; but extra care must then be taken in lifting and transit, and on sticky nursery soils skinning and breaking are almost sure to occur to an injurious extent. If the nursery soil is not naturally light and friable, plenty of leaf-mould and similar substances should be worked into it. It is useless to attempt to grow transplantable plants of Corsican Pine in clay, marl, or any adhesive soil. Whatever the method adopted, however, Corsican Pine is not, taking an average of cases, an easy tree to transplant under ordinary conditions. It is easy to say do things in this way or that, but in everyday practice most operations have to be done when they can, and not always when they ought to be. The successful cases of transplanting Corsican Pine are as often due to accidental combination of favourable circumstances as to deliberately-planned methods, and for this reason the cost of planting must be put comparatively high, although I do not see why it should amount to £8 or £10 per acre if mixed with Larch, Spruce, or Scots Pine, according to soil and situation. Planting Corsican Pine or any other expensive species pure is a sheer waste of money, although the timber produced thereby may be a little cleaner and less dependent upon the skill of the forester in thinning. As regards the comparative merits of Corsican Pine and Thuya plicata, a little more experience of the latter is needed before a definite decision can be reached. It has proved itself capable of growing into a straight, well-shaped pole, but will it produce big timber, say, boles 30 to 40 feet in length, with a mean quarter-girth of 12 inches or more? My impression is that it will not grow long enough in this country to produce really large timber, while its failure in exposed sites is well known. *A. C. Forbes.*

Carnation Propagation.—The experiences of your several correspondents on this subject are very interesting. It should be remembered that the season of the year has a great influence on the length of time the cuttings take to root, and particularly in the case of certain varieties. The rooting-medium and the condition of the cutting when it is inserted are other important factors. I select as cuttings shoots obtained from the middle of flowering growths, rejecting those situated very high or very low on the plants, and aiming at having the growth in a half-matured condition. I enclose a photograph (see fig. 51) of a section of a propagating house for Carnations, built upon American lines, which I think would be difficult to improve upon. In this house 98 per cent. of the cuttings root, and there is accommodation for 94,000 cuttings. A layer of clean, sharp sand is placed to the depth of 3½ inches upon the benches, and a bottom heat is provided of 55°. The atmospheric temperature is maintained at 45°, and the cuttings root in from three to four weeks. The shoots are not sprayed overhead, and, as a rule, the soil is only watered twice whilst roots are forming. The cuttings would root quicker in a warmer, moist atmosphere, but it is not desirable to allow this, for if they are forced into making roots, loss of vitality results and, moreover, disease is favoured by excessive moisture overhead. *W. C. Allwood, Haywards Heath.*



Fig. 51.—PROPAGATING HOUSE FOR CARNATIONS.

Transplanting Young Fruit Trees.—This point of dispute between Mr. Williamson and *B* is of much importance. *B* declares that to transplant a maiden tree is to stunt its growth, and from his point of view it would be ruined. Mr. Williamson says no. I dare say it is to a large extent a question of climate, and Mr. Williamson, I take it, is writing with the climate of the north of England and Scotland in his mind. The value of transplanting Maidens two years planted varies also according to the kind of fruit. It may be said to be essential for Plums, non-essential for Pears, though advantageous. I would go a step beyond advising the once transplanting of young trees; for Plums and Peaches it may be repeated two or three times. I have never known the practice to stunt growth, but it results in the production of an abundance of fibrous roots, with a vigorous but not rank top growth. The benefits of transplanting are so conspicuous that once it has been tried it must continue an essential of good management, and it is so important that anything I can say in favour of Mr. Williamson's contention, I gladly do. *R. P. Brotherston.*

Locusts.—A gentleman who knows the Argentine well, in conversation with me, stated that his son at Buenos Ayres had his crops completely devoured by locusts, and there was not a green leaf left on the place. Even Acacias (Robinias) and Eucalyptus, which are often immune from its attacks, were cleared of foliage, but Melons in fields were not touched, although vegetable Marrows were devoured. I thought this a remarkable incident and one that might interest your readers. Why did the locusts pass over the Melons? *George Bunyard, The Royal Nurseries, Maidstone.*

SOCIETIES.

ROYAL HORTICULTURAL.

(ANNUAL MEETING.)

February 11.—The 109th annual meeting of this Society was held on Tuesday last in the Lecture Room of the Vincent Square Hall, Westminster. The president, Sir Trevor Lawrence, Bart., occupied the chair and besides most of the members of the Council there were present some 50 or 60 Fellows. The proceedings were marked with great unanimity. The occasion was the 25th anniversary of the appointment of the Rev. W. Wilks as secretary, and the esteem in which he is held by everyone connected with the Society found suitable expression. After the minutes of the previous meeting had been read and confirmed, and 36 new Fellows elected, the president submitted the annual report. The report, said Sir Trevor, dealt fully with all the important aspects of the Society, and he did not therefore propose to make a long statement. The great event of the year was the Royal International Horticultural Exhibition, which did infinite credit to the horticulture of the kingdom, and resulted in so great a success financially that the horticultural charities will benefit in no inconsiderable degree. The new rock-garden at Wisley, said the president, was being planted as rapidly as possible, but he begged the Fellows to exercise patience, for such a large rockery took a long time to furnish. The mention of the honour conferred by the King on Sir Harry Veitch evoked loud applause. The name of Harry Veitch, said Sir Trevor, will always be associated with horticultural skill, enterprise and integrity. The proposed establishment of a Diploma in Horticulture was next referred to. Horticulture, said Sir Trevor, must ally itself more and more with the progress of science. They were grateful to Mr. Runciman for showing that the Government were at last disposed to recognise the great claims of horticulture. The horticultural trade of the country was of very great importance, and Sir Trevor said that it was not his fault that horticulture was not coupled with agriculture when the late Mr. W. H. Smith first instituted the Board of Agriculture.

A syllabus was being prepared for the proposed Diploma in Horticulture, and they had hopes that the University of London would institute a degree for horticulture.

All were exceedingly sorry that Mr. William Marshall was no longer able to attend the Council meetings or to take his place as chairman

of the Floral Committee. There were three Victoria Medals of Honour at the disposal of the Council, and these had been conferred on the secretary, Rev. W. Wilks, M.A., Mr. W. H. Divers, of Belvoir Castle Gardens, and Mr. James Whitton, superintendent of the Glasgow City Parks.

Sir Trevor said that there was one part of the report for which he himself was solely responsible. He referred to the paragraph concerning the secretary, who had held the office for 25 years. During all that time the Rev. W. Wilks had entered heart and soul into the work of the Society. His good tact and temperament in dealing with problems that required these qualities were known to most of them. He had pleasure in stating that the Council were having a portrait of Mr. Wilks prepared, and the testimonial fund, limited to one guinea subscription, had already reached the sum of £500. In addition, a silver salver, which he (the president) had pleasure in handing to Mr. Wilks, would serve further to remind him of his many friends of the R.H.S.

Sir Trevor Lawrence next referred to his own connection with the Society as president for nearly 29 years, and stated that his association with them had been one of his greatest pleasures. Having passed four-score years, he wished now to retire, but he had allowed his name to be brought forward again as president, so that the Council might have plenty of time to look out for a successor. Sir Trevor concluded his remarks



MR. W. H. DIVERS, V.M.H.
(See Report of R.H.S. Annual Meeting).

by offering the thanks of the Society to the permanent staff and the members of the various committees.

The treasurer, Mr. Gurney Fowler, seconded the adoption of the report, and took the opportunity to refer in detail to certain items of the balance-sheet. They had made a profit of £9,194 on the year, which was £739 more than on any previous occasion. The receipts from annual subscriptions showed an increase of £1,037, and receipts from hall lettings were £684 more than last year. Exhibitions showed a loss of £1,372. The adoption of the report was carried unanimously.

At this stage the Rev. W. Wilks rose to express his thanks for the testimonial and expressions of goodwill voiced by the president. From what had transpired recently he felt sure that every Fellow possessed feelings of friendship for him. The great honour of V.M.H. had been offered him on previous occasions, but he had always refused it. Now the Council gave him no choice in the matter.

The election of the president and officers was next proceeded with, and a vote of thanks to Sir Trevor Lawrence, proposed by Sir John T. D. Llewelyn, concluded the meeting.

Scientific Committee.

FEBRUARY 4.—*Present:* Mr. E. A. Bowles, M.A., F.E.S. (in the Chair); Messrs. R. H. Curtis, A. Rolfe, W. Hales, G. Wilson, A. Worsley, G. Massee, Sir H. J. Veitch, and F. J. Chittenden (hon. sec.).

Lælia Lundii (Reich. and Warm).—Mr. R. A. ROLFE exhibited, on behalf of Messrs. SANDER & SON, a plant of this dwarf Brazilian species, remarking that it is allied to L. Regnellii, but is easily separated by it habit of flowering on the undeveloped growth, a character which it shares with Cattleya Walkeriana. The leaves are narrow and fleshy, and the flowers solitary, pale lilac with a veined blotch on the front lobe of the lip. It is quite unlike any other Lælia in cultivation. Its history is given in the *Orchid Review* (xviii., p. 62).

Oncidioda × *Cooksoniana.*—The Orchid Committee referred the plant Oncidioda × Cooksoniana to this Committee. It had been exhibited by Messrs. CHARLESWORTH. The cross is a rather curious one between Cochlioda Noezlioda ♀ and Oncidium macranthum ♂, and the hybrid has something of the long raceme of its pollen parent, while the flowers are larger than the seed parent and somewhat different in colour. It was first raised by Mr. Cookson. A Botanical Certificate was unanimously recommended to the plant.

Crocus biflorus Weldenii.—Mr. BOWLES showed a seedling from Messrs. Barr of this form with a distinct sulphur tinge. He found that seedlings of C. chrysanthus and C. biflorus run into one another so as to render it impossible to regard them as anything but forms of a single species, as, indeed, Herbert had regarded them, grouping them under the name C. annulatus. C. chrysanthus gave blue seedlings similar in colour to those of C. biflorus.

Bitter Pit in Pear.—Some Pears were shown with brown spots in flesh similar to those frequently seen in Apples.

HORTICULTURAL CLUB.

FEBRUARY 4.—The annual meeting of the members of the Horticultural Club was held at the Hotel Windsor, the home of the Club, on the above date. The President, Sir Frank Crisp, Bart., presided.

The annual report, submitted by the Hon. Secretary, Mr. R. Hooper Pearson, showed that the number of members elected during the year was 39, and the number of deaths and resignations 8, making a net gain of 31. The roll of membership is now 192. A separate report, prepared by Sir Harry Veitch, treasurer, showed that the income for the year amounted to £198 11s. In 1912, for the first time, summarised reports of all the lectures, bound in the booklet with the Committee's report for 1911, list of members, rules, and other matter, were supplied to every member. The report and balance sheet were adopted.

The small club-room on the ground floor of the hotel having proved inadequate, a resolution was proposed to lease the large billiard room on the first floor, and this was carried. Owing to the generosity of the President one of the tables will be allowed to remain in the room.

THE ANNUAL DINNER.

Following upon the general meeting a company of 107, including ladies, assembled on the occasion of the annual dinner, when Sir Frank Crisp, Bt., again presided. The tables were prettily decorated with plants and flowers by Messrs. Jas. Veitch & Sons.

After the usual loyal toasts had been proposed, Mr. W. A. Bilney gave the toast of "The Horticultural Club." "Since they had met at the last dinner," said Mr. Bilney, "two of their members had been honoured by the King. Their President, Sir Frank Crisp, had been made a baronet, and the Treasurer, Sir Harry Veitch, a knight. "No one," said Mr. Bilney, "has ever been more popular in the horticultural world than Sir Harry Veitch." With regard to the club they had introduced one or two innovations at the meetings, and during the past year ladies were present for the first time. The membership had increased from 122 to 192 during the last two years, a fact which was due to the energy of Mr. Hooper Pearson.

Replying to the toast, the President stated that they might flatter themselves on the way the Club had progressed, for it was better off in members, as well as in money. The committee had just concluded arrangements for securing more comfortable quarters, a larger room having become necessary. The Secretary had put in an enormous amount of work, and the result was to be seen in the details of the annual report.

Sir Harry Veitch proposed the toast of "Rev. W. Wilks, M.A.," the special guest on the evening. He stated that it was a great pleasure and privilege to propose Mr. Wilks's health, for he had known him for 50 years. The success of the R.H.S., said Sir Harry Veitch, is to a very great extent due to Mr. Wilks, who is completing his 25th year of office as Secretary. He described Mr. Wilks as a true gardener, and one who has been imbued with the love of flowers from his earliest days. Sir Harry referred to the appointment of Mr. Wilks as Hon. Secretary of the Royal Horticultural Society in the darkest days of its history, as recently told by Mr. Wilks himself in the pages of the *Gardeners' Chronicle*. Speaking as a member of the Council, he knew that their Secretary's energies have ever been engaged in forwarding the interests of the Society. It was their pleasure to invite him that night as the special guest of the Club, and they welcomed him with the highest esteem and respect, with the hope that he may long be spared to carry on his useful labours.

The Rev. W. Wilks, in response, stated that, owing to his many friends of the horticultural Press, he had not been allowed to be ignorant of what had been said about himself. But publicity was foreign to his nature, for he had always endeavoured to keep himself in the background. His thoughts went back to a meeting of the Horticultural Club in 1877, when there were present many whose faces have long passed from our sight. He was urged to allow himself to be put



MR. JAMES WHITTON, V.M.H.
(See Report of R.H.S. Annual Meeting).

forward for the office of Secretary of the R.H.S. a society which rumour said was about to give up altogether. He was appointed to work in conjunction with Sir Trevor Lawrence, President, and Dr. (now Sir) Daniel Morris, Treasurer. The progress of the R.H.S. since that time had been phenomenal; it had attained the position of the most successful of the scientific societies in the whole world. But the success was not wholly or mainly due to him, the speaker. It was because they had in Sir Trevor Lawrence the best type of President, and one who was always at his post. The harmonious working of the Council had also been a great factor for success, and only on one occasion had there ever been anything approaching a serious disagreement between the councillors. His hope was that their successors might be imbued with the same spirit of unity.

The toast of "The Visitors" was proposed by the Rev. J. Pemberton, who offered a hearty welcome to their guests, Sir Daniel Morris, Mr. A. G. L. Rogers (Board of Agriculture), Sir Pieter Bam, and others.

Sir Daniel Morris, in replying, recalled his connection with the R.H.S. as Treasurer, and, referring to the straitened circumstances of the Society, he stated that when he left England to undertake important work in the West Indies he felt that the corner had been turned. The Horticultural Club, of which he, the speaker, was formerly a member, was following its big sister the R.H.S. in making great progress. The members were to be congratulated on having Sir Frank Crisp as their President, and an energetic secretary. He observed with pleasure that

Mr. Rogers, head of the horticultural branch of the Board of Agriculture, was present with them. Referring to the new permanent secretary of the Board, Sir Daniel Morris said that they would find in Sir Sydney Olivier a sympathetic friend of horticulture.

Mr. A. G. L. Rogers said that he hoped that before 25 years the new Branch of the Board of Agriculture would gain the appreciation of the horticultural world just as the R.H.S. now enjoyed it. Sir Pieter Bam also responded.

The proceedings, which were enlivened by a musical programme kindly provided by the President, terminated shortly after 10 p.m.

NATIONAL CHRYSANTHEMUM.

FEBRUARY 3.—The annual general meeting of the above Society was held at Essex Hall, Strand, on this date. The president, Sir Albert K. Rollit, occupied the chair, and about 50 members were present. The president congratulated the members on the progress made by the Society during the past year, and submitted the committee's report, from which we publish the following extracts :—

EXTRACTS FROM THE ANNUAL REPORT.

The special exhibition held at Essex Hall on November 20 was in the nature of an experiment, and must be pronounced a distinct success. The vases of single Chrysanthemums which were staged on this occasion were probably some of the finest that have ever been seen.

The annual conference was held at Essex Hall on November 20, when Dr. Russell gave a lecture, illustrated by limelight views, on "Soil Sterilisation." About 120 members were present at the lecture, and the discussion which ensued showed very clearly that the subject dealt with was one which is deservedly receiving attention at the hands of all the principal growers. A report of the lecture will appear in the *Transactions*.

Nine meetings of the Floral Committee were held during the year, when 249 new varieties were considered, as compared with 227 during the previous year. The following awards were made, viz.:—48 First-class Certificates, 18 Commendations, and 4 Awards for Colour.

The table given below sets forth the sections to which First-class Certificates have been awarded during the past five years. The absence of the decorative section in 1912 is due to the fact that under the new classification decorative varieties are not treated as a separate section in themselves, but are allocated to their proper places in the Japanese, Incurved or Single sections.

	1908.	1909.	1910.	1911.	1912.
Japanese	23	8	19	8	27
Japanese Incurved..	—	—	—	—	2
Incurved	3	3	2	2	3
Singles	13	7	12	21	16
Decorative	8	8	21	7	—
Total	47	26	54	38	48

The report of the Floral Committee in connection with the new classification was published in the 1911 *Transactions*, but it does not appear to have attracted as much attention as was anticipated. In order to bring the matter immediately under the notice of members, the main headings of the new classification are set forth below :—

SECTION I.—INCURVED.

The section is now sub-divided into :—

Sub-section (*a*)—Large-flowered varieties. Examples—Buttercup and Duchess of Fife.

Sub-section (*b*)—Medium and Small-flowered varieties. Examples—Daisy Southam and Mrs. G. Rundle.

SECTION II.—JAPANESE.

Sub-section I.—Japanese.

(*a*) Large-flowered varieties. Examples—Lady Talbot and F. S. Vallis.

(*b*) Medium-flowered varieties. Examples—R. F. Felton and Cranford Pink.

(*c*) Small-flowered varieties. Examples—Roi des Blancs and Source d'Or.

Sub-section II.—Incurved Japanese.

(*a*) Large-flowered varieties. Examples—Mrs. Gilbert Drabble and Mrs. A. T. Miller.

(*b*) Medium and Small-flowered. Examples—Mrs. Roots and Le Pactole.

Sub-section III.—Hairy Japanese. Example—Hairy Wonder.

SECTION III.—ANEMONES.

(*a*) Large-flowered, i.e., with a diameter of 3 inches and upwards. Examples—W. W. Astor and Sir Walter Raleigh.

(*b*) Small-flowered, i.e., with a diameter of less than 3 inches. Examples—Marie Stuart and Antonius.

SECTION IV.—POMPONS.

(*a*) Large-flowered, i.e., with a diameter of 2 inches and upwards. Examples—Mlle. Elise Dordan and William Westlake.

(*b*) Small-flowered, i.e., with a diameter of less than 2 inches. Examples—Snowdrop and Pygmalion.

SECTION V.—SINGLES.

Sub-section I.—Varieties with one or two rows of ray florets.

(*a*) Large-flowered, i.e., with a diameter of 3 inches and upwards. Examples—Mrs. John Peed and Edith Pagram.

(*b*) Medium and Small-flowered, i.e., with a diameter of less than 3 inches. Examples—Miss Mary Anderson and Nellie Riding.

Sub-section II.—Varieties with three to five rows of ray florets.

(*a*) Large-flowered, i.e., with a diameter of 3 inches and upwards. Examples—Mensa and Merstham Jewel.

(*b*) Medium and Small-flowered, i.e., with a diameter of less than 3 inches. Examples—Mary Richardson and F. W. Smith.

Sub-section III.—Anemone-centred varieties. Example—Kathleen May.

SECTION VI.—SPIDERY, PLUMED AND FEATHERY. Examples—Mrs. W. Filkins and King of Plumes.

At a special meeting of the Floral Committee, held on December 16, the question of granting special Market Certificates was considered, and after a full discussion it was decided to issue special certificates to varieties which were particularly suitable for market purposes. Varieties which are entered for these special Market Certificates will still be eligible for the F.C.C. or Commendation in accordance with the general rules.

The annual outing was held on July 15, when about 70 members and friends paid a visit to the gardens at Berry Hill, Taplow.

The annual dinner was held at the Holborn Restaurant on Wednesday, November 27, under the chairmanship of Mr. T. Bevan.



SIR TREVOR LAWRENCE HANDING TO THE REV. W. WILKS THE VICTORIA MEDAL OF HONOUR AND ENGRAVED SALVER AT THE R.H.S. ANNUAL MEETING ON TUESDAY LAST.

At the Royal International Horticultural Exhibition held in May last there were only two entries in the class for Chrysanthemums, and the Society's special gold medal was awarded to Messrs. W. Wells & Co., Ltd., of Merstham.

In connection with the Ghent Quinquennial Exhibition and Conference, to be held in May, 1913, your Committee have appointed Mr. Thomas Bevan as their special delegate to the Show and the Conference which is to be held in conjunction therewith.

The audited accounts of the Society for the past year are appended to this report, and it will be noticed that on December 31 the Society had paid the whole of its obligations and that the ordinary liabilities were nil. During the year a further sum of £25 was placed to the reserve fund, which now amounts to £75.

The exhibitions for 1913 have been fixed as follow:—

October 1 and 2 at the Crystal Palace.
November 5, 6, and 7 at the Crystal Palace.
December 10 at Essex Hall.

The Conference for 1913 will be held at Essex Hall, on Wednesday, December 10, the same date as that fixed for the late exhibition and meeting of the Floral Committee.

Mr. Thos. Bevan, chairman of the executive committee, endorsed the remarks made by the president, and seconded the adoption of the report, which was carried without further discussion.

A vote of thanks was accorded the retiring auditors, Messrs. A. Stevens and A. E. Cox. Sir Albert Rollit was re-elected president with acclamation, on the proposition of Mr. Thos. Bevan.

Mr. John Green (treasurer), Mr. Thos. Bevan (chairman of executive committee), Mr. E. F. Hawes (vice-chairman), and Mr. C. Harman Payne (hon. foreign corresponding secretary) were all re-elected. The retiring members of the committee who were eligible were also re-elected, and Messrs. R. B. Leech and W. P. Hyatt appointed to vacancies. Mons. Georges Truffaut, Versailles, was elected honorary foreign corresponding member.

SOUTHAMPTON ROYAL HORTICULTURAL.

JANUARY 20.—The 51st annual meeting of the above society was held, by permission of the Mayor, at the municipal offices on this date.

The statement of accounts shows the following results :—

	Receipts. £ s. d.	Expenses. £ s. d.
Rose show ...	172 6 1	166 4 10
Jubilee show ...	426 0 10	459 3 7
Autumn show ...	115 15 3	134 2 10
General account	158 10 3	158 11 3
New material ...		8 2 6
Total	£872 12 5	£926 5 0

The adoption of the report was proposed by Mr. E. Kemp Toogood, who took the opportunity to state that he wished to retire from the office of chairman of the council, owing to exigencies of business.

The President, Lord Swaythling, and the vice-presidents were re-elected. The chairman conveyed to Mr. Toogood the warmest thanks of the members for the way in which he had conducted the business of the society during his three years of office, and proposed the election of Mr. Herbert E. Molyneux as chairman of the council. The election was carried with acclamation, as was also the re-election of the secretary, Mr. C. S. Fuidge, who has held office since January, 1873. The election of six members to serve on the council and other officers concluded the business. The dates fixed for this year's shows are—Rose Show, June 25; Carnation and Summer Show, July 15 and 16; Autumn Show, October 28 and 29.

WOODBRIDGE HORTICULTURAL.

JANUARY 27.—The annual meeting of this society was held at the Bull Hotel on the above date, when Mr. John Loder, J.P., presided. The annual report stated that the money collected at the gates on the occasion of last year's show was £20 less than in the previous year. A letter was read from the president, Lord Rendlesham offering a 20-guinea Silver Challenge Cup, with £2 added each year, to the winner in the amateur class for 18 distinct varieties of Roses, the cup to be won three times in succession by the same exhibitor before becoming his property. Messrs. Arthur Crowe, H. Barrell, W. Norman, E. R. Nunn and Dennis Rowland were elected members of the committee.

ROYAL GARDENERS' ORPHAN FUND.

ANNUAL MEETING.

FEBRUARY 7.—The annual meeting and election in connection with the Royal Gardeners' Orphan Fund took place on Friday, the 7th inst., at Simpson's Restaurant, Strand, London. The chairman of the committee, Mr. H. B. May presided. The annual report read as follows :—

REPORT FOR 1912.

The general tenor of the report on the operations of the Fund during the past year which the Committee has to present to the subscribers, is again of a satisfactory character, inasmuch as the contributions from all sources show a slight increase. This is the more gratifying because the increase is due to a larger measure of support in the form of annual subscriptions. In common with most other institutions which make their annual appeals in May, the Fund severely felt the effects of the national appeal then being made on behalf of the widows and orphans of the victims of the awful "Titanic" disaster, but the position was happily retrieved later by contributions from other sources. The expenditure side of the accounts again shows an increase in the amount disbursed in weekly allowances to the children, while an appreciable reduction in the working expenses has been brought about, without adversely affecting the efficiency of the management.

The number of children receiving the full benefits of the Fund at the commencement of the year was 117, and 28 candidates waiting for election—all in sore need of assistance—were in receipt of compassionate allowances. Of this number 18 were elected to receive the full allowance at the annual meeting, and grants-in-aid were subsequently made to the 25 candidates who are appealing for election at this meeting. During the year 12 children ceased to receive aid from the Fund, and 19 children—the greatest number that the Committee can prudently see their way to provide for—will be elected on February 7. The total amount disbursed in allowances during the year was £1,796 10s., bringing up the amount distributed under this heading to the grand total of over £26,542.

The annual Festival, held on May 8, under the genial and extremely sympathetic presidency of Sir Edwin Durning-Lawrence, Bt., again proved a most enjoyable function, a large company being present, including all the well-known supporters of the Fund and many visitors. The Chairman's happy comments on the humanising influence of the Fund, and his strenuous appeal for a larger increase in annual subscriptions and generous donations, met with a sympathetic response, greatly to the financial benefit of the charity, the collection amounting to nearly £1,000. The Chairman munificently headed the list with 100 guineas. Mr. Sherwood and his sons again showed their keen interest in the welfare of the Fund by contributing £100; while Messrs. Sutton & Sons also contributed a most generous donation. Your Committee desires to express their deep gratitude to Sir Edwin Durning-Lawrence for the valuable services he has rendered to the Fund, and has pleasure in inviting the subscribers to add his name to the list of Vice-Presidents.

The Committee acknowledges with much gratification the receipt of the sum of £266 16s. 4d., the proceeds of a collection made to perpetuate the memory of the late Mr. Peter Barr. Your Committee greatly rejoices that a lasting memorial of this distinguished horticulturist—known the world over as the Daffodil King—should be associated with the Royal Gardeners' Orphan Fund, which he helped so materially to establish, being a member of the original Committee.

The receipt of a legacy of £100, left to the Fund by the late Mrs. Ann Pollett, widow of Mr. Henry Montague Pollett, founder of the old-established horticultural printing business of Messrs. H. M. Pollett & Co., and for some years a much respected Vice-President of the Fund, is also gratefully acknowledged.

The warmest thanks of the Committee are again most heartily accorded to the Stewards at the annual dinner; to the Honorary Local Secretaries—and especially Mr. Carver, Mr. Neve, and Mr. Rowe—whose kindly efforts to increase the list of annual subscribers have been most successful; and to the Committees of the Altrincham Gardeners' Association, the Bradford Chrysanthemum Society, the Reading Gardeners' Association, the Chislehurst Gardeners' Society, the Sevenoaks Gardeners' and West Kent Chrysanthemum Society, the Tonbridge Gardeners' and Amateurs' Society, the Leeds Professional Gardeners' Club, and the Spen Valley Gardeners' Society, who, by means of concerts and other forms of entertainment, and the sale of flowers at exhibitions, have rendered the Fund most valuable help. The Committee would greatly rejoice if other local Committees would give a thought to the needs of the Fund and render it some assistance by similar means. They would also specially commend the objects of the Fund and the valuable work it is doing to the members of Gardeners' Improvement Societies, who, by means of card collections among themselves, could render most valuable assistance.

With very sincere regret your Committee deplores the loss by death during the year of a greater number than usual of valued friends and constant supporters of the Fund. In its early days the Fund received substantial help from the late Mr. Herbert J. Adams, one of the oldest of the Vice-Presidents; and from first to last it has had no more constant advocate of its claims to support than the late Mr. Alexander Dean. Among others whose unfailing assistance for some years past will be greatly missed, may be named, Lady Brownlow, Mrs. James Cawthra, Mrs. Alderson, Sir Robert Pullar, Mr. Arthur D. Sassoon, Mr. J. S. Bergheim, Mr. James S. Beal, Mr. W. A. Garraway, Mr. F. Noakes, Mr. C. Smith (Guernsey), Mr. H. Estill Tillman, Mr. Edward Sawyer, and Mr. John Hayes, the last two of whom rendered yeoman service in connection with the successful Floral Fêtes held in Covent Garden Market in the years 1888, 1889, and 1890.

The members of the Committee who retire by rotation are Mr. A. R. Allan, Mr. W. H. Cutbush, Mr. G. Gordon, Mr. D. Ingamells, Mr. J. F. McLeod, Mr. R. Hooper Pearson, Mr. E. Rochford, and Mr. H. L. Wright, all of whom, being eligible, offer themselves for re-election, with the exception of Mr. Rochford. The Committee much regrets the retirement of such a good friend to the Fund as Mr. Rochford, and to fill the vacancy thus created has great pleasure in recommending the election of Mr. Arthur W. Metcalfe, The Gardens, Luton Hoo, Beds.

The Committee desires most cordially to thank the auditors, Mr. P. Rudolph Barr and Mr. Frank Reader, for their exhaustive examination of the accounts now presented. Mr. Barr is the retiring auditor, and the Committee has special pleasure in recognising the value of his past services by recommending him to the subscribers for re-election.

In formally moving the adoption of the report and balance-sheet, Mr. May stated that the receipts from all sources exceeded those of the previous year, and this was partly owing to the item known as "Annual subscriptions." It had been his duty in previous years to emphasise the fact that gardeners did not support the Orphan Fund in the liberal manner they ought to do. He had had to point out that, whilst the greater portion of their income was received in donations raised at or in connection with the annual festival, the annual subscriptions were very small indeed. Consequently, it was with the greater pleasure that he was able on this occasion to see some slight improvement in this matter. He could only recommend all who have the interests of the fund at heart to endeavour to assist the upward tendency to the best of their power. Notwithstanding the receipts showed an increase on the previous year, there had been a decrease in the management expenses, and this economy had been brought about without any loss in efficiency. They had spent during the year upon orphans alone a greater sum than had ever been spent. Amongst the items of this expenditure is the sum allotted as "Grants in aid" to children waiting for election, and money given to orphans, who, withdrawing from the list at the age of 14 years, are assisted by purchasing for them, in some cases clothes for entering upon a situation, and in others tools that are a necessity in entering into apprenticeship. The committee regarded the practice of helping the children at this crucial period as a matter of the highest importance. The festival dinner was successful, and they were indebted to Sir Edwin Durning-Lawrence, Bart., for the help he rendered them on that occasion. He hoped that during the proceedings at that meeting they would elect Sir Edwin Durning-Lawrence to the position of vice-president. Amongst special receipts, Mr. May mentioned the sum of £266 16s. 4d. as part of the proceeds of the Barr Memorial appeal, and a legacy of £100 left to the Fund by the late Mrs. Ann Pollett. Certain horticultural and mutual improvement societies had helped the Fund in various ways during the year, some by promoting sales of flowers at exhibitions, some by arranging concerts, and some in other ways. To one and all the committee offered its thanks.

Mr. W. Bates seconded the motion for the adoption of the report and statement of accounts, and the resolution was passed unanimously.

Mr. George Gordon then proposed that Sir Edwin Durning-Lawrence, Bart., be elected vice-president of the Fund. This was adopted.

Proceeding to the election of officers, Mr. Howe proposed that Mr. Edward Sherwood be re-elected treasurer of the Fund. The motion was seconded by Mr. R. Hooper Pearson and accepted with enthusiasm. The chairman then proposed that Mr. Brian Wynne be re-elected secretary, and this was seconded by Mr. Ingamells and carried unanimously. Mr. Rudolph Barr was re-elected auditor, the retiring members of the committee were re-elected, and Mr. Arthur W. Metcalfe was elected a member of the committee in the place of Mr. E. Rochford, who retires.

At this stage of the proceedings scrutineers were appointed for the purpose of counting the ballot, and the meeting stood adjourned. Shortly before 5 o'clock the meeting reassembled, and Mr. Ingamells read out the names of the fortunate candidates. These were as follow :—

Wilfred Ernest Goff	370
Sarah Jane Lee	326
Margaret Elizabeth Jennings ...	323
Elizabeth Mary Dodd	302
Wallace Titheridge	288
Jessie Lilian Deadman	259
Margaret Riley	248
Margaret Dorothy Steptoe ...	244
Bertha Beatrice Mason	240
Ida Eleanor Piper	236
Marion D. A. Woollett	225
Ethel Ellen Miller	218
Percy George Peerless	211
Edna May Holloway	198
Grace Elizabeth Crouchman ...	175
Eric Arthur Lindekvist	167
Dorothy Mildred Mitchell ...	165
Sylvia Dora Collins	163
Ivy Irene Appleford	154

Another candidate had been selected by Mr. Sherwood to benefit by the "James Campbell Grant," thus leaving six candidates unprovided for.

After the chairman had declared the 20 candidates duly elected, Sir Harry J. Veitch rose for the purpose of drawing attention to the fact that the Fund was expecting to receive a sum of something like £700 from the directors of the Royal International Horticultural Exhibition, 1912. He thought it would be satisfactory to all of them if the committee could see their way, in view of this special receipt, to elect by resolution the six unsuccessful candidates on the list. After the chairman had indicated that if a resolution of the kind were passed the committee would agree to its provisions, the resolution was seconded and adopted. Consequently, the Fund will start the new year with a clean slate, having provided for the needs of all the present candidates. From inquiries made since this course was decided upon, we understand that, in accepting the resolution, the supporters of the Fund have gone to the extreme length of their discretion, and extra efforts will have to be made during the coming year to help the Fund to bear the extraordinary burden that has been placed upon it. All were delighted that the candidates were elected, but it must not be forgotten that heroic steps such as this must be followed by increased activity on the part of those who labour for the Fund.

The members of the committee and a few friends met again in the evening at dinner, when Mr. H. B. May presided. The proceedings were interspersed with vocal and instrumental music.

CASH STATEMENT FOR THE YEAR ENDING DECEMBER 31, 1912.

RECEIPTS.

	£ s. d.	£ s. d.
To Subscriptions: General	324 15 8	
Local Secretaries ..	102 14 10	
		427 10 6
,, Donations: General	118 4 8	
Local Secretaries ..	22 1 4	
		140 6 0
,, Receipts from Annual Dinner		925 16 7
,, Legacy: Mrs. Ann Pollett		100 0 0
,, "Peter Barr Memorial"		266 16 4
,, Advertisements in List of Subscribers ..		27 13 0
,, Dividends on Stock and Interest on Deposit		381 13 4
,, Income Tax returned		6 16 9
		2,276 12 6
,, Balance last Account		870 15 8
		£3,147 8 2

Note.—Investments.

3 per cent. London & County Consolidated Stock	£7,240 15 10
3 per cent. Canada Stock	2,000 0 0
L. & N.-W. Railway 4 per cent. Preference Stock	340 0 0
Great Indian Peninsula Ry. Guaranteed 3 per cent. Stock	514 0 0
2½ per cent. Consols	1,100 0 0
"Thomson Memorial Trust"—	
East Indian Railway B. Annuity of £14, cost	430 11 0
"Emma Sherwood Memorial"—	
Metropolitan Water (B) 3 per cent. Stock ..	516 15 11
"Maybud Campbell Grant"—	
Metropolitan Railway 3½ per cent. Preference Stock	391 0 0

EXPENDITURE.

	£ s. d.	£ s. d.
By Allowances to Orphans	1,621 5 0	
,, Grants in Aid	149 5 0	
,, "Emma Sherwood Memorial"	13 0 0	
,, "Maybud Campbell Grant" ..	13 0 0	
		1,796 10 0
,, Secretary's Salary		200 0 0
,, Printing and Posting List of Subscribers		41 19 1
,, Rent, Insurance, Firing, Lighting, &c.	46 15 7	
,, Printing and Stationery	47 19 6	
,, Advertising	8 9 0	
,, Annual General and Committee Meetings	23 16 2	
,, Postages	27 14 0	
,, Bank Charges	3 17 0	
,, Petty Cash: Sundries	4 11 2	
		163 2 5
		2,201 11 6
,, Balances: Cash at Bank ..	494 18 8	
Cash on Deposit ..	450 0 0	
Cash in hand	0 18 0	
		945 16 8
		£3,147 8 2

Having inspected the Securities and examined the Books and vouchers supplied to us, we hereby certify the above Account to be correct.

P. RUDOLPH BARR
FRANK READER } Auditors.

January 13, 1913.

FOREST GATE AND STRATFORD AMATEUR CHRYSANTHEMUM.

JANUARY 31.—The annual meeting of this society was held on the above date, and a report of useful and successful work during the year was given by the secretary. The annual exhibition of Chrysanthemums which was held in November was a great success, and the monthly exhibitions and lectures are increasing in popularity. The profits of the society are given towards the support of the West Ham Hospital, which has already received in this way more than £300.

SCOTTISH HORTICULTURAL.

FEBRUARY 4.—The monthly meeting of this association was held on this date. There was an attendance of 95 members.

Mr. Massie, the retiring president, occupied the chair at the commencement of the proceedings, and, after the formal business of the evening had been transacted, introduced his successor in the office, Mr. David King, who thereupon took the chair and delivered his inaugural address, taking as his subject "Recent Advances in Horticulture."

The exhibits were:—Collection of Tulips, including the variety Coronation, from Mr. KING; hybrids of Primula obconica, from Mr. D. W. THOMSON, Edinburgh; newer varieties of Perpetual-flowering Carnations and specimens of Phœnix Roebelinii from Messrs. TODD & Co., Edinburgh; flowers of Pyrus japonica, Galanthus Elwesii, and G. nivalis fl. pl., and Helleborus niger maximus, H. orientalis "Albin Otto," H. abchasicus grandiflorus, and H. caucasicus purpurascens major, all from the open air, from Mr. C. COMFORT, Broomfield, Davidson's Mains; and Richardia africana, from Miss BURTON, Polton. There was also exhibited an improved tool for the testing of soil and planting of Potatos and bulbs, from Mr. JOHN MACK, Edinburgh.

LAW NOTES.

GROWERS AND UNDEVELOPED LAND DUTY.

AN interesting test case in connection with the liability of nurserymen to pay Undeveloped Land Duty has recently been decided (see *Gardeners' Chronicle*, February 1, 1913, p. 77), and, as the result proves the necessity for an immediate amendment of the law on the subject, it may perhaps be useful to explain the present position of affairs.

Growers will, doubtless, recollect that in the year 1910 a novel provision was inserted in the Finance Act of that year which had the effect of throwing additional taxation upon all horticultural and agricultural land which, in the opinion of the Government valuers, might be worth more for some other purpose than it is for horticulture or agriculture. Land of this nature is in fact to be regarded as "undeveloped" and accordingly liable to pay what amounts to an annual fine!

Those who may wish to read the precise wording of the Act for themselves will find that it runs as follows:—

> "Land shall be deemed to be undeveloped land if it has not been developed by the erection of dwelling-houses or of buildings for the purposes of any business, trade or industry other than agriculture (but including glasshouses or greenhouses) or is not otherwise used bonâ fide for any business, trade or industry other than agriculture."

The Act further provides that in this connection the term "agriculture" shall be deemed to include "the use of land as meadow or pasture land or orchard or osier or woodland or for market gardens, nursery grounds or allotments."

EXEMPTION OF GREENHOUSES.

It will be noticed that the section of the Act first quoted above makes special reference to glasshouses or greenhouses, and, although the wording is not altogether happily chosen, the evident intention is to provide that glasshouses or greenhouses shall not come under the ban imposed on horticultural or agricultural land, and that the effect of erecting such glasshouses or greenhouses is to enable at least a portion of the land to be treated as "developed," and consequently free from the new duty.

It will, however, readily be seen that the legislature has omitted to say how much of the land shall be regarded as "developed" in cases where glasshouses or greenhouses have been erected, and considerable difference of opinion has arisen on this point accordingly.

Readers of the *Gardeners' Chronicle* were warned at the time when the Budget was passed that it would not be safe to regard anything more than the actual site occupied by the greenhouses as being free from Undeveloped Land Duty, but some have held that the effect of erecting greenhouses would be to render free from the tax all land which might be used or required in connection with such greenhouses. An excellent opportunity of testing the question arose recently in connection with the nurseries of Messrs. George Jackman & Son, of Woking, and, having obtained promises of support both from the Horticultural Trades Association and the Land Union, this firm brought their case before Mr. Howard Martin, one of the referees appointed by the Government for the purpose of hearing appeals of this nature.

PROCESS OF CULTIVATION.

As is well known, Messrs. Jackman cultivate a large area of land at Woking, and, in connection with that branch of their business which is devoted to the raising of hardy or semi-hardy plants or shrubs, they have erected 18 greenhouses (in addition to pits), these being used as "nurseries" for the young plants which they propagate; the greenhouses, in fact, serve much the same purpose as incubators in the case of poultry farming. The usual process is followed. The cuttings in the first place are deposited in the greenhouses or pits, the latter consisting of a range of "lights" generally about 6 feet by 4 feet, and about 3 feet high, and having brick walls and a glass roof. Each "light" holds about 80 pots containing about 1,280 cuttings (16 cuttings generally go into one pot). When the cuttings have taken root they are placed singly in pots which, in their turn, are closely stacked in the greenhouses. Later on the cuttings are placed in larger pots until the time arrives when they have to be prepared for a more hardy life in the open. When this time arrives they are stood out or "plunged" (with their pots) in the soil out-of-doors to grow on and harden off, or else planted out in small beds.

At this stage the plants are no longer stacked together, but are placed at considerable intervals from each other. These intervals vary according to the species of plant: some, for instance, being only 6 inches by 10 inches apart, while others are as much as 12 inches by 15 inches apart, producing an effect somewhat similar to the squares of a chess board.

As the infant plants increase in stature they are removed to fresh land and set apart at even greater distances to be grown on until they arrive at a marketable size. This sometimes takes several years, but it will be obvious that the land is used for the purpose of carrying out the initial operations commenced in the greenhouses, and it may reasonably be contended that unless such land were available the greenhouses would be of little practical use for fulfilling the purposes for which they were erected.

Speaking, therefore, from a practical business point of view, it is reasonable to suggest that the land thus used has been "developed" by the erection of glasshouses or greenhouses, and ought, accordingly, to be exempt from Undeveloped Land Duty.

CONSTRUCTION OF THE ACT.

The Inland Revenue Commissioners, however, contended that, according to the wording of the Act of Parliament, nothing more than the land actually covered by the greenhouses ought to be treated as exempt except for an allowance of sufficient space round the greenhouses to permit of access to them and the penetration of light and air. Accordingly, they contended that, in allowing one additional acre of land for each acre actually covered by glass they had, if anything, erred on the side of generosity.

Messrs. Jackman & Son, on the other hand, submitted that, the Commissioners having once admitted that something more than the actual site of the greenhouses should be exempt from taxation, the matter was merely one of degree, and that, as the greenhouses would be useless unless sufficient uncovered land were provided in which to plunge and develop the young plants on their leaving the greenhouses, it would only be fair to allow 8 or 10 acres of open land for each acre covered by glass.

The Referee has now made his award in favour of the Inland Revenue Authorities, thus, in effect, endorsing their contention that, according to the present wording of the Act of Parliament, the whole of Messrs. Jackman & Son's nurseries are liable to the payment of Undeveloped Land Duty with the exception of the actual site occupied by the greenhouses and buildings coupled with a sufficient space around them to allow of access to them and of the penetration of light and air.

NEED FOR AMENDMENT.

A definite decision on the point having been obtained, it remains to be considered what remedy should be applied in order to free growers from what is, on the face of it, an intolerable hardship. At present they are confronted with the absurd position that so long as they propagate plants under glass they are free from the annual tax, but as soon as the same plants are necessarily transferred to the open air the soil in which they are planted is regarded as "undeveloped land," for which a yearly fine must be paid. Could illogicality be carried further?

There are sound reasons for thinking that owing to the wording of the Finance Act an appeal on the point to a higher court would not be successful, and it seems clear that, being now armed with a definite decision, the best course to adopt would be for nurserymen to press for an early amendment of the law on the subject.

Messrs. Jackman employ on their land in question a large number of hands; they pay considerable sums yearly in respect of both local rates and imperial taxes, and it is impossible to imagine any cogent reason why they should pay an additional annual tax in the shape of Undeveloped Land Duty any more than if they used the land for the purposes of a brickfield or a tannery or, in fact, for the purpose of any trade, business, or industry other than that of horticulture. Even those who are in favour of a tax being imposed in cases where the development of a town is stifled by the owner of the land surrounding it, will scarcely contend that Messrs. Jackman & Son are stifling the development of the town of Woking, or that there is not still ample room for the expansion of the neighbourhood; nor can it fairly be urged that Messrs. Jackman & Son could possibly put their land to any better purpose than that to which it is at present devoted. Their only offence is that their land has a potential building value, *and that they are not engaged in some other trade.*

It seems clear, therefore, that some statutory enactment is urgently needed to remedy a case of such hardship, and it is to be hoped that growers in all parts of the country will press their members of Parliament to support a movement for speedy legislative reform in the direction indicated.

The matter is also well worthy of the attention of the various associations interested in the development of horticulture. *H. M. V.*

THE WEATHER.

THE WEATHER IN WEST HERTS.

Week ending February 12, 1913.

The ninth unseasonably warm week of the present winter.—Since the present month began there has been only one cold day, and but four cold nights. The days of the past week have all been unusually warm, and on the warmest day (the 11th) the temperature in the thermometer screen rose to 56°, which is the highest reading recorded here as yet during the present winter. On the three cold nights the exposed thermometer registered 11° of frost. Notwithstanding the last two cold nights the ground is 8° warmer than is seasonable, both at 1 and 2 feet deep. Rain fell on four days, but to the total depth of less than half an inch. Some rainwater has come through both percolation gauges on each day during the week, but since the 7th the amounts have been small. The sun shone on an average for two hours six minutes a day, which is five minutes a day short of the mean duration of bright sunshine at the same period in February. On the 11th the sun was shining for six hours forty-eight minutes—making this the sunniest day as yet this winter. The wind was very variable in strength, but, as a rule, rather high. In the windiest hour the mean velocity reached 20 miles direction S. The mean amount of moisture in the air at 9 o'clock in the afternoon fell short of a seasonable quantity for that hour by 8 per cent. Chionodoxa Luciliæ, known as the Glory of the Snow, observed each year in the same part of my garden, came first into flower on the 6th inst., which is 80 days earlier than its average date in the previous 26 years, and nine days earlier than the earliest date recorded in any of those years. *J. M.*

February 12, 1913.

GARDENING APPOINTMENTS.

Mr. J. H. NEVE, for the past 3 years General Foreman at Hengherst Park, Ashford, Kent, and previously for nearly 3 years Foreman at Essendene, Caterham, Surrey, as Gardener to Mr. MCGOWAN, Hiham, Winchelsea, Sussex.

Mr. C. TIDBURY, for the past 3½ years Gardener to G. A. KESSLER, Esq., New York Lodge, Bourne End, and previously for 7½ years Gardener to D. E. HIGHAM, Esq., Coombelands, Addlestone, as Gardener to J. PEECH, Esq., Abbey Mead, Bourne End, Buckinghamshire.

Mr. A. PATTINSON, previously Foreman at Kip'in Hall Gardens, Northallerton, as Gardener to GEORGE L. CARLIN, Esq., Thorncliffe, Whitburn, Sunderland.

Mr. WM. ALLAN, for the past 3 years Foreman to the Duke of ABERCORN, Baronscourt, Co. Tyrone, as Gardener to Mrs. WALTER WILSON, Belvoir Park, Belfast. (Thanks for donation of 2s. for the R.G.O.F. box.—EDS.)

Mr. H. GREENING, for the past 2 years Foreman at Dingley Hall, Market Harborough, and formerly for 2 years Foreman at Bedgebury Park, Goudhurst, Kent, as Gardener to the Right Hon. the Earl of DONOUGHMORE, Chelwood Beacon, Uckfield, Sussex.

Mr. JOSEPH HOPE, for the past 4 years on the Staff of the Royal Botanic Garden, Edinburgh, as Gardener to A. K. BULLEY, Esq., Ness, Neston, Cheshire.

Mr. F. J. CROSBY, late Gardener to A. J. VAN PRAUGH, Esq., Arabin House, High Beech, Essex, as Gardener to HERBERT OKEDEN, Esq., Stutton House, Stutton, Ipswich, Suffolk.

Mr. P. J. CLINCH, late Gardener to Lady MOWBRAY and STOURTON, Corbalton Hall, Tara, Co. Meath, as Gardener to Mr. G. C. STAPLETON, Wyvern, Killiney, Co. Dublin.

Mr. WILLIAM BACK, after a second term of years as Gardener to the Marquess of HUNTLEY, Aboyne Castle, Aboyne, Aberdeenshire, as Gardener to G. A. WILLS, Esq., Coombe Lodge, Blagdon, Somerset.

Mr. FREDERICK RADFORD, for 4 years Foreman at Heathlands Gardens, Wokingham, Berkshire, as Gardener to the Rev. C. HORNBY, Ashendene, Hertford.

Mr. FREDK. W. LARNER, for the past 6 years General Foreman at Sandbeck Park, as Gardener to CHAS. THELLUSON, Esq., Brodsworth Hall, Doncaster. (Thanks for 2s., which has been placed in the R.G.O.F. box.—EDS.)

Mr. JOHN MACDEARMED, Outside Foreman at Shavington Hall Gardens, and previously at Keir Gardens, Dunblane, as Gardener to R. CORBET, Esq., Adderley Hall, Market Drayton.

Mr. HARRY FISHER, for nearly 6 years Gardener to JOSEPH SHAW, Esq., K.C., at The Hall, Brampton Brian, and previously at Bryanston and Duntreath, as Gardener to the same gentleman, Kentchurch Court, near Hereford.

CATALOGUES RECEIVED.

SEEDS.

M. H. SINCLAIR, 156, Union Street, Aberdeen (and Sweet Peas).
THE WARGRAVE PLANT FARM, LTD., The Arcade, Liverpool Street, London.
CLARK BROTHERS & Co., 65, Scotch Street, Carlisle.
GEO. COOLING & SONS, 11, Northgate Street, Bath (and Bulbs).
W. DRUMMOND & SONS, LTD., 57 & 58, Dawson Street, Dublin.
R. B. LAIRD, DICKSON & SONS, LTD., 46, Hanover Street, Edinburgh.
HILLIER & SONS, 95, High Street, Winchester.
D. WHITEHOUSE, 27, Waterworks Street, Hull.
ARTHUR S. RITCHIE & Co., 51 & 53, High Street, Belfast.
BEES LTD., Mill Street, Liverpool.
CHARLES TURNER, Slough.
GEE & SONS, Biggleswade.
BARR & SONS, 11, King Street, Covent Garden—
DOBIE & MASON, 22, Oak Street, Manchester.
STORRIE & STORRIE, Glencarse, Perthshire.
SUTTON & SONS, Reading—Farm Seeds.
JOHN FORBES, LTD., Buccleuch Nurseries, Hawick, Scotland—Plants and Seeds.

MISCELLANEOUS.

CLIBRANS, Hale, Altrincham.—Nursery stock, special clearance list.
WILLIAM SYDENHAM, Melbourne, Derbyshire—Chrysanthemums.
WEBB & SONS, Wordsley, Stourbridge—Farm Seeds
H. C. SLINGSBY, 142, Old Street, London—Trucks and Ladders.
HASSALL & Co., Chase Side, Southgate, London—Orchids.
YOUNG & Co., Hatherley, Cheltenham—Perpetual-flowering Carnations.
GARTONS, LIMITED, Warrington—Farm Seeds.
MANSELL & HATCHER, LTD., Rawdon, Yorkshire—Lily Bulbs, Orchids, &c.
R. WALLACE & Co., Kilnfield Gardens, Colchester—Bulbs.

FOREIGN.

PAPE & BERGMANN, Quedlinburg, Germany—New Cactus Dahlias.
HENRY A. DREER, 714, Chestnut Street, Philadelphia, Pa.
PETER HENDERSON & Co., 35 & 37, Cortlandt Street, New York.
L. FÉRARD, 15, Rue de l'Arcade, Paris—General Nursery Stock.
VILMORIN-ANDRIEUX ET CIE, 4, Quai de la Mégisserie, Paris—Seeds.
V. LEMOINE ET FILS, Rue du Montet, 136-142, Nancy—New Plants.
RICHARD DIENER & Co., Mountain View, California—Seeds, Bulbs, and Plants.
VALLERAND FRÈRES, 47, Avenue Faidherbe, Asniérés, France—Begonias, Gloxinia, and Cyclamen.
DAIKER & OTTO, Langenweddingen-Magdeburg—Nursery Stock.
AN DIE GRAFLICH SCHWERINSCHEN STAUDEN-KULTUREN. Wendisch-Wilmersdorf bei Thyrow (anhalter Bahn)—Nursery Stock.

Obituary.

R. W. SHEPHERD.—We learn from the pages of the *Canadian Horticulturist* of the decease of Mr. R. W. Shepherd, of Montreal. This well-known Canadian grower made a speciality of the Apple known as "Fameuse," and earned a lasting name by his excellent results. His death will be an undoubted loss to the fruit interests of Canada.

L. SPÄTH.—The news reaches us of the death of Mr. L. Späth, the well-known nurseryman of Baumschulenweg, near Berlin. Mr. Späth specialised in trees and shrubs, and many choice varieties are known by his name, whilst his collections of trees, shrubs, and hardy plants were amongst the most exhaustive in Europe. His extensive nursery was so well kept that it had the reputation of being a model establishment.

H. J. PEARSON.—We regret to record the death of Mr. H. J. Pearson, of the firm of Messrs. Foster and Pearson, horticultural builders, which took place on the 8th inst. at Assiut, Egypt, where he had gone for the benefit of his health. He was a son of the late Mr. J. R. Pearson, of the Chilwell nurseries, and brother of Mr. A. H. Pearson, Mr. Charles Pearson, and Mr. Duncan Pearson. The late Mr. Pearson was at one time a member of the R.H.S. Council. He took a great interest in natural history, and paid repeated visits to the Arctic regions to study rare birds. He was the author of two volumes on the birds of Northern Europe.

ENQUIRIES AND REPLIES.

HOW TO TRAP MICE (see pp. 63, 79).—The following is a simple method of trapping mice in the garden. Dig holes in various parts of the garden, and cover the bottom of the hole with a slate, placing it perfectly level. Invert a 7-inch or 8-inch pot on the slate, so that the hole in the bottom of the pot is about 1 inch below the surface. Fill in the soil around and over the pot, leaving the hole just clear. The mice may be induced to enter by placing baits at the bottom. Once inside the pot they are helpless prisoners and may be destroyed by poison, as they are out of the reach of dogs and cats. *C. W. B., Leicester.*

ANSWERS TO CORRESPONDENTS.

BASIC SLAG: *W. C. A.* The best time for applying this manure is the autumn and winter, at the rate of from 4 to 6 ounces per square yard. It should not be mixed with sulphate of ammonia. Basic slag is a good phosphatic manure for clayey loams, rich garden soils and marshy and boggy lands.

CEDRUS DEODARA DYING: *H. A. K.* Without knowing more of the circumstances and conditions under which the tree is growing, it is impossible to express a definite opinion as to the cause of the top branch of the "old" Cedrus Deodara dying. The general causes of the dying back of the leader are injury, by winds or otherwise, and want of nourishment. Coniferous trees which are growing in lawns often find the conditions unsuitable as they approach maturity. It must be remembered that such trees are mostly surface-rooters and the grass takes first toll of the surface soil as well as the rains. The latter is more important than would at first be supposed, for these trees require plenty of water during their season of growth, which is somewhat late in the season, when the rainfall is comparatively light. If the position of the tree permits it would be well at once to apply a good top-dressing, which may take the form of soil, such as old potting compost or fine loam from the kitchen garden. Road soil is an excellent medium for top-dressing trees, but it is not likely that in your locality this will be procurable. Good results may also be obtained from the use of farmyard manures, but the layer should not be more than 6 inches thick. Unless the summer should be very wet it will be as well to give the tree a thorough soaking with water once a week, taking measures to prevent it running off the surface if the ground is not level.

FICUS LEAVES: *A Constant Reader.* The disease is caused by a species of the fungus Gloeosporium. Remove all affected leaves and spray the plant with liver of sulphur.

GARDENER'S NOTICE: *R. A.* The courts have decided that a head gardener is in the same position as a domestic servant, and is therefore entitled to a month's notice or a month's wages instead of notice. The case you mention would also appear to come under this rule, and the same conditions would accordingly apply, in spite of the fact that the wages are not paid monthly, but the law on the subject is not altogether clear.

MUSHROOM BED: *C. P. & Co.* The foreign fungus is Coprinus micaceus, which has been introduced with manure.

NAMES OF FRUITS: *T. K.* 1, Wormsley Pippin; 2, Golden Winter Pearmain; 3, Bess Pool.—*H. B.* Greaves Pippin; 2 and 3, Dumelow's Seedling (syn. Wellington).—*H. T.* The larger fruit is Hambledon Deux Ans, the smaller one Grange's Pearmain.—*Pomona.* Hanwell Souring.

NAMES OF PLANTS: *Wokingham.* Lælia anceps.—*J. Johnson.* 1, Selaginella Kraussiana; 2, S. caesia; 3, S. Emiliana; 4, Begonia (send when in flower); 5, B. echinosepala; 6, Ruellia Portellæ; 7, Coronilla tarentina; 8, Pellionia pulchra; 9, Metrosideros saligna; 10, Abutilon megopotamicum var. variegatum.—*G. H. Johnston.* Ilex latifolia, a native of Japan.—*S. J.* Cestrum (Habrothamnus) elegans; thin the growths out after flowering.—*F. R.* 1, Pteris tremula; 2, P. cretica; 3, Adiantum formosum; 4, Asplenium lucidum.—*X. Y. Z.* Dracæna marginata.—*A. F., Midlothian.* 1, Cypripedium Lachesis, hybrid of C. marmorophyllum; 2, C. Lathamianum; 3, Polypodium irioides (crested form).

PEACH SHOOTS: *S. W. T., Salisbury.* The Peach shoots are affected with the fungus Botrytis. Cut out the diseased branches, and spray the trees with a rose-red solution of permanganate of potash.

PLANTING PEARS: *C.* It would be risky to depend upon only one of the late Pears, which are apt to be capricious as to fruiting, or to produce fruit of inferior quality. Easter Beurré is almost a failure in some soils, though well worth growing where it succeeds. Why not plant at least one other late variety, such as Joséphine de Malines (January-May), a better Pear and even a longer keeper than Easter Beurré, and more likely to flourish? Other late varieties which are excellent where they succeed are Nouvelle Fulvie (November-February) and Bergamotte Esperen (February-April). There would be a better chance of pollination if two or three late varieties were planted than if Clapp's Favourite alone were relied on, although it might be useful for pollen if its blossom were not too much ahead of the flowers of late varieties. One good mid-season Pear, such as Doyenné du Comice (October-November), the best of all Pears, and one of the most regular croppers, might well be added.

ROSE STEM: *Constant Reader.* The blotches of the Rose stem are caused by a fungus Hendersonia rubi. Drench the stems with liver of sulphur, four times at intervals of a week, at a strength of 2 ounces in 3 gallons of water.

SWEET PEAS: *A. P. B.* No disease is present in the plants sent for examination.

VIOLET LEAVES UNHEALTHY: *E. C.* The disease is caused by Ascochyta violæ, which is favoured by excessive moisture in the atmosphere. Remove the diseased leaves and admit more air to the frame.

WALLFLOWERS DYING: *One Puzzled.* There is no disease present: apparently something injurious has been spilt over the plant.

Communications Received.—T. D. A. C., Colorado—J. W.—R. N., Uppsala—E. M.—G. M. T.—S. J.—H. C. L.—H. M. V.—C. E. W.—N. D.—F. W. O. T. S.—W. B. L.—H. C. P., Halstead—R. J. A.—Mrs. M. A. Mc. A.—L. K.—W. G. C.—H. R. D.—W. F.—R. W. T.—R. P. B.—W. P.—G. S. S.—W. C.—A. D.—H S.—H. M. M.—F. J.—R. P. S.—W. H. C.—A. J.—W. P.—G. A. A.—I. R.—T. J. W.—Doubtful—Sir J. Sinclair—J. G. W.—H. R. F.—J. S.—A. J.—A. E. E. S., Devon.

THE
Gardeners' Chronicle

No. 1,365.—SATURDAY, February 22, 1913.

CONTENTS.

American notes	117	Obituary—	
Apples for S. America	121	Ford, W.	128
Arsenic in plants	122	Nicol, Robert Hay	128
Avery Hill, winter garden at	121	Temple, John T.	128
Beetle, the Heather	124	Orchid notes and gleanings—	
Books, notices of—		Cattleya Fabia	114
Small Gardens for Small Folk	121	Lycaste Skinneri	114
Broncho Grass in S. Africa	121	Plants in the Antarctic Continent	123
Carnation propagation	123	Pine, Corsican	124
Carnations, calyx bursting in	124	Ranunculus glacialis	117
Combretaceæ, South African	116	Rosary, the—	
Crown-gall, prohibition against	121	White Roses for garden culture	114
Educational Colonies Association	121	Roses, artificial, at the exhibition	123
Fecundity, inheritance of	120	Seeds, sterilisation of	121
Florists' flowers—		Societies—	
Carnations and Mendelism	122	Debating	127
Forestry appointments	122	Manchester and N. of England Orchid	127
Fruit farming in 1912	124	N. of England Hort.	120
German Emperor as agriculturist	120	Royal Horticultural	125
Hawthorns, American	114	Royal Scottish Arboricultural	126
Heredity and mutation	118	Surveyors' Institution	120
Jaysinia Botanic Garden	122	Sweet Peas, winter-flowering	113
Larch, Japanese	121	Vanillin, artificial	121
Market fruit garden, the	118	Vegetable oils	122
Moss, eradication of	121	Week's work, the	118, 119
		Wood pigeons, reduction of	120
		Wood, ripened	124

ILLUSTRATIONS.

Cratægus Geneseensis growing in Genesee Valley Park, Rochester, N.Y., U.S.A. 115
Jaysinia Botanic Garden, showing the Giffre Valley 122
Ranunculus glacialis on the Gruben Alps in the Valais 117

WINTER-FLOWERING SWEET PEAS.

THE following notes refer to the two *Bulletins* issued recently by the Department of Horticulture, Cornell University, U.S.A. The *Bulletin* dealing with winter-flowering Sweet Peas extends to 50 pages, and is very fully illustrated. The full page illustrations depict the Peas at different stages, e.g., in February, and in May after blooming for five months.

Mr. Alvin C. Beal, the horticultural expert at the university, has been responsible for the experiments. He tells us that the trials of the winter-flowering type were planted on September 24, and that they began to bloom in December, whereas varieties of the ordinary type planted at the same time did not flower until the last week of April.

It is stated that the winter-flowering Sweet Peas make their greatest growth under glass. When planted in the spring in the open ground they make only a very slender growth as compared with the garden type. It has already been pointed out in these columns that the winter-flowering type runs up to 18 inches or 2 feet before beginning to branch, the stems appearing to have more woody fibre than is contained in the normal type. An account is given in the *Bulletin* of a house of winter-blooming Sweet Peas at the establishment of Mr. A. C. Zvolanek, West Hoboken, N.J. The seed was sown in boxes (6 inches wide and 6 inches deep) out-of-doors on September 2, and the boxes were removed indoors the last week of October. The plants began to bloom on November 20, and the first cut of 200 flowers was sent to market on November 24. The dimensions of the house were 73 by 12 feet, and the atmospheric temperature at night was 45° Fahr. From this house Mr. Zvolanek cut 20,400 blooms during the month of December and 38,800 during January, the stems being about 14 inches long. Mr. Zvolanek had five other houses of Sweet Peas, but in these cases the seed was sown in pots early in September, and the seedlings planted out in the solid beds in November and December in the same soil in which Chrysanthemums had been growing. The variety Zvolanek's Christmas, which did so well in the first-named house, was one that originated with Zvolanek, from a cross between an early-flowering form of Lottie Eckford and Blanche Ferry. A page of the *Bulletin* is devoted to the parentage of varieties. No reference is made to the behaviour which must take place in the first generation after the cross is made. It really looks all too simple in the way it is put down here.

The Rev. Mr. Arkwright's conclusions extracted from the *Sweet Pea Annual* of 1907 are given. He is of opinion that winter-flowering Sweet Peas form a distinct group, from the fact that Eckford's Sweet Peas which he sowed at the same time, i.e., at the end of September (in Algiers) did not flower till May, whereas the others blossomed from January onwards.

A number of pages are devoted to the culture under glass. With good culture, winter-flowering Sweet Peas grow from 6 to 10 or more feet in height, and if they are to attain their full development a house with this amount of head-room is required. They also need much light: the lighter the house the more blooms are produced. Low or dark houses are not practicable. Beds are recommended in preference to benches—solid beds giving a cool, moist root run. To Britishers the directions for seed sowing will hardly appeal—drills 3 feet apart, 1 to 1½ inches deep, and seed dropped in 1 to 1½ inches apart. We should think this much too close even for winter-flowering sorts. The precaution of sowing white-seeded sorts in sand is advised; such sorts also require more careful attention in the watering; facts with which we are familiar.

Sowing for Christmas blooms should be done about August 20. Sowings on September 1 will bloom in January; sowings on September 15 will bloom in February.

A valuable hint is contained in the advice to approximate to the natural outdoor spring conditions as closely as possible by keeping the temperature low until the flower-buds appear. Green fly, which attacks the plants as soon as they appear above ground, seems to be the most troublesome insect pest. The dropping of flower-buds is, as all growers know, a common experience. This generally results from a sudden fall of temperature or from over-watering. An important conclusion arrived at may be quoted in full:—

"Altogether 73 varieties from five sources in America, Algeria and England have been tested at this station. This probably represents the largest collection of the forcing type ever brought together. In all these trials there has never been discovered the slightest reason for believing that any variety was a hybrid between some species of the Vetch and Lathyrus odoratus. Side by side with the varieties of winter-flowering Sweet Peas, the following species of Vetch have been grown and studied at all stages of development: Vicia sativa, V. villosa, V. Gerardii, and V. fulgens."

DEVELOPMENT OF SWEET PEAS.*

Bulletin III contains 76 pages. In the preface we are told that the investigation was begun with a view to studying the various species of Lathyrus for the purposes of monographing them, and particularly of determining their value as ornamental plants. . . . . The description of the garden varieties will appear in a later publication. We shall look forward with great interest to the appearance of this promised publication. Over 40 pages of the *Bulletin* before us are devoted to the botany of the genus and the evolution of the modern Sweet Pea, which formed the subject of our leading article on January 18. It is worth stating here that in the process of the elaborate study of the genus, the following species or reputed species were grown at the experimental station:—Lathyrus Cicera, L. sativus, L. s. azureus, L. s. coccineus, L. sylvestris, L. sp. (India), L. tingitanus, L. Ochrus, L. pratensis, L. nervosus, and two other unnamed species. Fourteen stocks of L. latifolius; L. sylvestris, L. pubescens. L. grandiflorus, three stocks Lord Anson's blue Pea, Orobus niger, O. lathyroides, O. albus roseus, O. superbus, O. vernus two stocks, in addition to the large collection of varieties of L. odoratus. All these different stocks were obtained from seedsmen in America and in Britain, the pure species coming from the United States Department of Agriculture. Very full descriptions, in many cases illustrated, are given of the species.

The history of the evolution of the Sweet Pea is very fully traced. With this we are conversant in this country through the writings of Mr. S. B. Dicks and others in the annual volumes of our National Sweet Pea Society. Mr. Eckford's work comes in for a large share of notice, and we are struck with a remark of the author that the enthusiasm for Mr. Eckford's varieties in the early nineties in America "supplied the required stimulus, largely lacking at home, for Mr. Eckford to put forth his best efforts, and the result is the remarkably long list of meritorious varieties that he sent out." There is no doubt some truth in this. We know that Mr. Atlee Burpee purchased Mr. Eckford's varieties very largely at the time mentioned, but we also think that Mr. Eckford's invaluable work was generally recognised in this country, and the demand for his varieties quite eclipsed all others; in fact, he was almost the only raiser of good Sweet Peas during the last quarter of the 19th century. We are told that the first American variety was the epoch-making Blanche Ferry, introduced by Messrs. D. M. Ferry & Co. in 1889. Its history is interesting. Some 30 years before its introduction a woman in northern New York noticed and saved seed from a particularly bright-flowered plant of Painted Lady. She continued growing it for 25 years, each year selecting the brightest and best plant for seed. In this way came Blanche Ferry. In 1893 Messrs. Peter Henderson and Co., of New York, introduced "Emily Henderson," a white sport from Blanche Ferry. A list of American introductions is given, bringing us down to 1911, in which Burpee and Morse figure largely. This part of the *Bulletin* finishes with a paragraph, which we quote:—"Truly a long list. Among them are some of the finest varieties of Sweet Peas yet introduced, which indicate that the American growers can equal those of any country in the world. The cupid or dwarf Sweet Pea, the bush and winter-flowering types, all distinct in habits of growth, were first discovered on this side of the Atlantic. Since the introduction of Countess Spencer, many excellent varieties of waved form have been developed, and this work of crossing and selecting is going steadily forward. Judging from the record made by the very small number of American breeders, what would America accomplish if she had even one-half the number of English producers!"

It is claimed that the American growers have introduced the majority of the best varieties in the striped and marbled group.

We believe this is true, as that class has never been so popular in Britain as in America; Helen Pierce was an epoch-making flower, and America

* *Sweet Pea Studies, iii.*

Spencer, Aurora Spencer and Senator Spencer are very fine, but just at present our home raisers seem to have "got a move on" with Mrs. W. J. Unwin and May Campbell.

Full credit is given to Countess Spencer and Gladys Unwin. Mr. Beal says "These varieties were forerunners of the new type which revolutionised Sweet Pea-culture in England, and has revived and quickened the interest in America."

Under the heading pollination it is stated that a casual observation of the flower might lead to the conclusion that actual cross-fertilisation is brought about by insect visits, but that, however, is not the case. We quote here Mr. Beal's observations, which are confirmed by our home growers. "In the first place, if we examine flowers in the bud stage we find the pollen ripe. The position and condition of the stigma change, for before the maturation of the pollen the stigma is below the anthers. A day or two later the stigma has risen to a position among the anthers, and is viscid enough to hold the pollen grains. In another day or two it has grown beyond the anthers. Self-fertilisation has taken place, and the development of the legume has begun. This process has taken place before the flower is fully open."

The dwarf or cupid Sweet Pea originated in 1893, on the grounds of Messrs. C. C. Morse & Co., in California. It was advertised by Messrs. Burpee in July, 1895. It is pointed out that but for Burpee's announcement a similar dwarf form would have been offered by Mr. Benary, of Erfurt, in 1896, probably under the name of Tom Thumb. Morse's cupid came as a variation in the tall variety Emily Henderson. It would be interesting to know in what variety Mr. Benary's cupids appeared. About the same time a similar dwarf strain appeared in the grounds of Mr. Eckford at Wem. This is somewhat like the history of the origin of the Spencer or waved type, insomuch as the latter arose in several places about the same time, but, so far as we know, in England only.

The cultural instructions are such as would give excellent results in England. Stress is laid on the application of lime, "a good dusting of air-slacked lime applied while working the soil in autumn is beneficial. Many soils that have been cultivated for a long time are acid, so that leguminous plants, such as Clover or Sweet Pea, will not grow, or, at least do not thrive. Lime corrects this acid condition, and, furthermore, it releases plant food that would not be otherwise available." Very sound advice, indeed. Such *Bulletins* as these furnish abundant evidence that Americans are turning their attention to Sweet Pea problems with a thoroughness which many in this country will envy.

ORCHID NOTES AND GLEANINGS.

CATTLEYA FABIA.

An interesting point in colour variation in hybrid Orchids has been disclosed in the gardens of Mrs. Bischoffsheim, The Warren House, Stanmore. A small batch of Cattleya Fabia was raised by Mr. Taylor, the Orchid grower there, by crossing the darkest coloured form of C. labiata with the pollen of C. Dowiana aurea. On flowering all the plants had clear white sepals, and petals with a more or less deep rose front to the lip, which even in the darkest forms was much lighter than either of the parents, and, in fact, identical with the forms known as C. Fabia alba, which are said to result from crossing white forms of C. labiata. This is another instance of the yellow-petalled species eliminating the deep rose tint of the seed bearer, which, without proof to the contrary, would be expected to give highly-coloured varieties. In the famous deep rose and crimson Westonbirt varieties of C. Fabia, raised by Mr. H. G. Alexander in Lieut.-Col. Sir Geo. L. Holford's collection, and in Monsieur Maron's C. Fabia Vigeriana, the yellow-petalled C. Dowiana aurea was the seed bearer and the colour of the dark C. labiata, from which the pollen was taken, is passed on in an intensified degree.

LYCASTE SKINNERI.

Four very fine flowers of this old Guatemalan Orchid, sent by Edward Clark, Esq., J.P., Lapswood, Sydenham Hill (gr. Mr. T. F. Hollis), show what a beautiful Orchid it is when well grown. With this species, as with many other Orchids, there is great variation in the size of the flowers, some importations being of very poor quality throughout. The flowers sent are 6 inches across, the sepals being 2 inches wide. The lightest-coloured flower has the sepals white tinged with lilac, the lip and petals being pure white; the next is suffused with rose on all the segments, the lip being spotted with that colour; the third is blush-white with bright magenta-rose blotches on the lip, and the darkest has the petals coloured rose-purple, the lip being blotched with claret-red colour. The plants were grown in the cool end of the intermediate house. A proportion of loam fibre was added to the peat and Sphagnum-moss in the compost, in which they are potted. Either cut or on the plants the flowers last for several weeks.

THE ROSARY.

WHITE ROSES FOR GARDEN CULTURE.

The number of highly-effective Roses of this special colour is sufficiently circumscribed. The grandest of them all, Frau Karl Druschki, is generally assumed to have been derived from Merveille de Lyon and Caroline Testout. It is of larger size and much purer texture than the former, but lacks the fine fragrance of the latter Rose. "British Queen" (Messrs. McGredy & Son) has been described as a fragrant Frau Karl Druschki, and "Mrs. Andrew Carnegie" (Messrs. Cocker & Sons, Aberdeen) as a lemon-coloured variation. Margaret Dickson is a variety which has for many years proved itself invaluable for garden decoration, and Marchioness of Londonderry is a magnificent exhibition Rose. If these are not absolutely pure white in colour, they are, like Bessie Brown, White Lady, and Augustine Guinoisseau, at least of an effective ivory or creamy-white complexion. Two Roses of purer white aspect than these are the White Killarney and the White Caroline Testout, of which (as Mr. George Taylor informs me) the latter requires to be strongly established before its capabilities can be fully revealed.

Among Tea and Noisette Roses of this special colour, three of the finest are Niphetos (seen to greatest advantage in a conservatory, where its feathery texture is not ruffled by winds), Souvenir de S. A. Prince, and Mme. Alfred Carrière, a beautiful climbing hybrid Noisette of quite inestimable value, which for the last 15 years has flowered luxuriantly through a lofty Hawthorn hedge at the head of my garden. Souvenir de S. A. Prince, which bears an honoured name, a pendulous Rose of the greatest fascination, was derived from the pink-hued Souvenir d'un Ami. Of all the fair daughters of Catherine Mermet, the fairest is The Bride, which has an exquisite suffusion of delicate green below the petals, instinctively reminding me of that sweetest of all Oriental Lilies —L. speciosum Krætzeri. Undoubtedly the loveliest of recently originated Tea Roses is Molly Sharman Crawford, named after a lady whose grandfather, an Irish colonel, used to sit on Sunday, when he annually visited Logan House in this parish, in the antique gallery of our venerable church. This "gem of purest ray serene" is of the most delicate eau-de-Nil white, of perfect formation, extremely refined in aspect, and exquisitely perfumed. *David R. Williamson.*

AMERICAN HAWTHORNS.

SOME NEW ARBORESCENT SPECIES.

The Crus-Galli group of Cratægus includes a large number of species which are very abundant in the region west of the Mississippi River from Southern Missouri to the Gulf. They are particularly numerous in Missouri. In the 19th annual report of the Missouri Botanical Garden for 1908, Dr. C. S. Sargent described 40 species in the State of Missouri, giving 37 as endemic. East of the Mississippi River the species are not nearly so abundant. The few species are, however, represented by numerous individuals, and there are areas on the Niagara River and in Western New York where several species are represented by large colonies of individuals. Most of the Crus-Galli species west of the Mississippi River have villose corymbs, and most of the species in the east and north-eastern state have glabrous corymbs.

The Crus-Galli group is remarkably well defined from the other Cratægus groups. The leaves are sub-coriaceous to coriaceous, obovate to oval, ovate, or rhombic cuneate at the base, lustrous deep green above, usually serrate only above the middle, without lobes except on vigorous shoots, the veins generally within the parenchyma; the petioles usually without glands; fruit subglobose to short-oblong, oval or ovate, with usually thin greenish flesh.

The different species of the Crus-Galli group are excellent ornamental subjects for parks and private estates. The lustrous deep green leaves render them particularly attractive. Most of the species bloom in Western New York during the first two weeks in June.

The following species described are in the Crus-Galli group:—

Cratægus Arduennæ, Sarg.—This species attains a height of 25 feet, with a trunk 12 inches in diameter. The branches are spreading, forming a round-topped head. The leaves are obovate, acute or rounded at the apex, cuneate at the base, smooth and tinged with red as they unfold, dark lustrous green above, pale beneath, $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long and $\frac{1}{2}$ to 1 inch wide. The 5 to 12 stamened flowers, with yellowish white anthers, in large compound corymbs with a few scattering hairs on the pedicels, blossom about June 5. The short-oblong, dark crimson fruits, in many drooping clusters, ripen from October 1 to 15. This species was first observed and described in Illinois, but it has since been found in Michigan, London, Ontario (Canada), and Western New York.

C. Bartramiana, Sarg.—This is commonly a tree 22 feet tall, with a trunk 12 inches in diameter, the branches mostly spreading. The leaves are obovate cuneate, usually rounded at the apex, and narrowed towards the base, dark lustrous green above, dull pale green below, 2 inches long and 1 inch wide on fertile shoots. The flowers, with 10 stamens, have pale yellow anthers, and are produced on large, compound corymbs, and blossom during the first week in June. The subglobose, lustrous, crimson fruits ripen about October 1. The type plants occupy a hedgerow in the old Bartram's Garden, Philadelphia, and the species is named in compliment to John Bartram, the distinguished Pennsylvania botanist of the 18th century, who, perhaps, planted the hedge of Hawthorns in which this species grows.

C. Canbyi, Sarg.—This is commonly a bushy tree, with loosely-spreading branches, forming a thin spreading top, and grows 20 feet high. The leaves are broadly obovate, to oblong-ovate, rounded at the apex, cuneate at the base, very dark green above, and dull green below, on fertile shoots $2\frac{1}{2}$ inches long and 2 inches wide. The 10 and 12-stamened flowers, with rose-coloured anthers are borne on lax, drooping clusters, and come into bloom about June 5. The short-oblong to subglobose dark crimson fruits ripen about the middle of October, and hang on

he branches until December. The fruits are distinguished by dark red soft pulp, which is unusual to many Crus-Galli species. The leaves are very persistent in this species, and hang on until nearly December.

C. CERASINA, SARG.—This Hawthorn attains a height of 25 feet, with a trunk occasionally 5 feet before branching and 10 inches in diameter at base. The branches are ascending and spreading and somewhat intricate, forming an open-topped head, with the ends of the branches extending remotely. The leaves are oblong-obovate, usually acute at the apex, concave cuneate at the base, 2½ inches long and 1½ inch wide on fertile shoots. The flowers, with 10 to 12 stamens, and pale pink anthers, are produced on sparsely-flowered compact corymbs and open about June 12. The short-oblong, bright cherry-red fruits, suspended on red pedicels, ripen at the end of September. The type tree grows near the High School in the city of Niagara Falls, N.Y. Dr. C. S. Sargent and myself together discovered this handsome species eight years ago, and it was much admired by Dr. Sargent at the time.

C. ENGELMANNI, SARG.—This species has a distinctive habit of growth, and forms a flat topped tree 20 feet tall, with a short, stout trunk. The wide-spreading branches are always horizontally outlined. The leaves are occasionally elliptical, usually broadly obovate, generally rounded at the apex, and gradually narrowed towards the base, 1½ inch long and 1 inch wide on fertile shoots. The 10 stamened flowers, with rose anthers, come into bloom during the first week in June. The globose, bright orange-red fruits, with greenish pulp, ripen about the middle of October. The type tree is in Missouri, and it was collected by the late Dr. Engelmann in 1860, but was not described until 1901. Large plants of this species must be of considerable age. Young seedlings assume a flat, branching habit, and are low in stature for many years, and it seems self-evident that large adult individuals must require many years to attain their dimensions.

C. ERECTA, SARG.—A tree 30 feet high, with a trunk 30 feet in diameter, the branches mostly ascending, forming a handsome, symmetrical head. The leaves oval to obovate, occasionally with an orbicular outline, acute at the apex, cuneate at the base. On fertile shoots 2 inches long and 1½ inch wide. The flowers, with pale yellow anthers, are borne on large, lax, glabrous corymbs, and open during the first week in June. The subglobose, dull crimson fruits ripen about the middle of October. Seedlings of this species grow rapidly.

C. FECUNDA, SARG.—This species attains the dimensions of a tree 25 feet high with a trunk 12 inches in diameter and stout, spreading branches, forming a broad, symmetrical head. The leaves are oblong-obovate to oval, occasionally rounded at the apex, narrowed towards the base, dark lustrous green above, yellow-green below. On fertile shoots the leaves are 2½ inches long and 2 inches wide. The 12 to 15 stamened flowers, with purple-red anthers, borne on large compound villose corymbs, expand during the first week in June. The short-oblong to subglobose, orange-red fruits ripen about the middle of October. C. fecunda is interesting as being one of a group of five or six species, the seeds of which were sent from Allenton, St. Louis County, Missouri, in 1880, by Mr. G. W. Letterman to Dr. C. S. Sargent, Director of the Arnold Arboretum, Harvard University, and it was, in large measure, the flowering and fruiting of these plants in the Arboretum that led Dr. Sargent to undertake the modern investigation of Cratægus.



FIG. 55.—CRATÆGUS GENESEENSIS, GROWING SPONTANEOUSLY IN GENESEE VALLEY PARK, ROCHESTER, N.Y., U.S.A.

C. GENESEENSIS, SARG.—The Genesee Hawthorn attains the dimensions of a tree 32 feet high and a trunk 12 inches in diameter, with the branches spreading and ascending, forming a broad, picturesque head 33 to 35 feet across. The leaves are oblong-obovate, and often narrowly obovate, acute at the apex, and rapidly narrowing from near the middle to the base, dark lustrous green above and pale below, on

fertile shoots 2½ inches long and 2 inches wide. The flowers, with 7 to 10 stamens, and pink or purplish-pink anthers, open about June 5. The short-oblong, scarlet, lustrous fruits, in large, drooping clusters, ripen from the middle to the end of October, and make a brilliant display on the leafless branches until December 1. The type plant grows on the banks of the Genesee River, on the south side of the City of Rochester, N.Y. It is distributed throughout the Genesee Valley in Western New York. The illustration (fig. 55) shows a tree 32 feet high and 35 feet across.

C. LIVONIANA, SARG. This species forms a tree 20 feet high, with a trunk 9 to 10 inches in diameter, and stout, drooping and horizontal branches form a broad, irregular head. The leaves are broadly oblong-obovate, rounded at the apex and narrowed towards the long, slender base; dark lustrous yellow-green on the upper surface, pale below, on fertile shoots 2½ inches long and 1¾ inch wide. The large blossoms, with 20 stamens, and blush-pink anthers, on large, lax corymbs, with long pedicels, come in flower about May 28 (unusually early for the Crus-Galli group). The lustrous crimson fruits, short-oblong, full and rounded at the ends, and considerably larger than the fruits of most of the Crus-Galli species, ripen about October 1. The type plant grows at the outlet of Hemlock Lake, in Livingstone County, N.Y. This species, with its immense white flower clusters in spring and brilliant fruits in the autumn, is a cynosure in any landscape that it adorns.

C. MOHRI, BEADLE.—This Hawthorn is a tree 30 feet high with a trunk 8 inches in diameter: the branches usually spread and form a symmetrical head. The obovate to rhombic leaves, acute at the apex, cuneate at the base, dark, lustrous green above, pale below, are 1½ inch long and 1 inch wide on fertile shoots. The 16 to 20-stamened flowers, with yellowish-white anthers, produced on large villose corymbs, open (in cultivation at Rochester, N.Y.) about June 21. The subglobose to short-oblong, bright orange-red fruits, ripen about October 15. This species is said to be distributed throughout Georgia, Alabama, Mississippi and Tennessee.

C. PALMERI, SARG.—This species forms a tree 25 feet high, with a trunk 12 inches in diameter, wide-spreading branches, and a broad, flattish-topped head. The leaves are oval to oblong, usually slightly acute at the apex, broadly cuneate at the base, dark lustrous green above, pale below, and on fertile shoots 2 inches long and 1¾ inch wide. The flowers, with 10 stamens and yellowish-white anthers, expand during the first week in June. The subglobose cherry-red fruits ripen at the end of October. The type-tree grows at Webb City, Missouri, and is named after Mr. E. G. Palmer, who has studied the Cratægi of Missouri for many years.

C. PERSIMILIS, SARG.—A tree 25 feet high, with a trunk 10 inches in diameter, branches spreading and ascending, forming an irregular head. The leaves are obovate to oval, occasionally rounded at the apex, cuneate at the base, very dark lustrous green above, orange-green below, 2 inches long and 1¾ inch wide on fertile shoots. The 10 to 20-stamened flowers, with rose-pink anthers, on sparingly-branched corymbs, open about June 12. The oblong to subglobose, dark crimson fruits ripen about October 15. The type-tree grows on the banks of Black Creek, near Rochester, N.Y.

C. ROBUSTA, SARG.—This is commonly a low tree 20 feet high with a stout trunk 10 inches in diameter, and very widely-spreading branches. The leaves are oblong-obovate to broady obovate, rounded at the apex, pale below, and on fertile shoots, 2½ inches long and 2 inches wide. The flowers, with 10 to 20 stamens, and pale pink anthers, open about June 12. The short-oblong to obovate lustrous crimson fruits ripen about October 1. The type-tree grows on the banks of the Niagara River, on the American side, a short distance above the Falls. It also occurs on the grounds of the Rumsey Estate, on the north side of Delaware Park, at Buffalo. C. robusta is a beautiful ornamental Hawthorn for parks and gardens. *John Dunbar, Rochester, N.Y., U.S.A.*

THE SOUTH AFRICAN COMBRETACEÆ.

(Continued from p. 68.)

2.—C. PHILLIPSII*, *Dümmer*, sp. nov.

A SCANDENT shrub, second year's branchlets terete, longitudinally striate, madder-brown, glabrous; twigs ashy-grey or fawn-coloured and densely sericeous towards their extremities, leafy. Leaves opposite, longer than the internodes, spreading; petiole terete, densely pilose, 2 mm. to 3 mm. long; leaf-blade (immature?) obovate, oblong or oval, rounded or with an acute recurved apiculus, rounded or subcordate at the base, widest above the middle, 4.7 cm. long, 2.7 cm. broad, firmly membranous, pale green, glabrous and lepidote above, slightly pilose on the elevated midrib and 5-6 pairs of lateral veins of the dorsal surface; margin closely undulate. Spikes axillary, densely flowered, hemispheric, broadly obconic of cylindric 2 to 3 cm. long and equally as broad, the flowerless portion of the peduncle averaging 1 cm. long, and the entire inflorescence pale-brown and densely pubescent, with interspersed scales. Flowers scarlet? Bracts minute, ovate, acute, 2 to 2.5 mm. long. Receptacle 12 to 13 mm. long, externally and densely greyish pubescent, the lower part fusiform, 5 mm. long, 0.7 to 1 mm. broad, the upper narrowly obconic, slightly contracted about the middle, deciduous, pubescent within above the contraction; disk lobed, margin densely pilose; calyx-segments erect, triangular, obtuse, densely ciliolate. Petals clawed, spathulate, 7 to 8 mm. long, the limb elliptic, obtuse or subacute, 2 mm. broad, pubescent without. Stamens glabrous, 15 to 17 mm. long. Style filiform, exceeding 2 cm. in length, glabrous; stigma minute. Fruit unknown.

Kalahari Region.—Transvaal, Komatie Poort, Oct., 1901, Kirk, *Herb. Kew*, 57.

The Transvaal representative of the Natalian C. bracteosum, Brandis, differing from it in the absence of the leaf axil-tufts, the more rigid consistency of the leaves, the shorter externally more densely pubescent receptacles, shorter and narrower petals, longer stamens and styles. It also exhibits an alliance to C. mossambicense, Engler, but here again the absence of the axil-tufts and the different form of the receptacle preclude its conspecificity. The flowers, like C. bracteosum, are a pale lilac in the dried stage, hence I assume their scarlet colour in the living state. The species is named in compliment to a personal friend, Mr. E. P. Phillips, M.A., an assiduous botanical collector at the Cape and collaborator in the recent monograph of the South African Proteaceæ (*Flora Capensis*, vol. v, pt. i).

3.—C. GUEINZII, *Sonder* in *Linnæa*, xxiii (1850), 43.

A small, much-branched tree; second and third year's branches stout, greyish, stringy-barked and glabrescent, the ultimate twigs also terete, with short stiff, often dark rufous spreading pubescence. Leaves opposite or alternate, large and spreading; petiole stout, subterete, 5 to 8 mm. long; leaf-blade broadly ovate or elliptic, or oblong, acute, or shortly mucronate, rounded or obliquely emarginate at the apex, subcordate or rounded at the base, 3.5 to 11 cm. long, 3 to 8 cm. broad, thickly and rigidly coriaceous, in youth softly and dark rufous-velvety above and below, at maturity glabrescent above, except for the impressed puberulous midrib and lateral veins, light or glaucescent and shining green; lower surface pale ochre and thickly lepidote, with minute scattered pubescence, the midrib and 5 to 10 pairs of lateral veins and reticulations prominently raised, coalescing towards the margin, and forming an intra-marginal band; margin slightly wavy. Spikes often numerous, solitary and axillary on short lateral branchlets, oblong-cylindric, 1 to 5 cm. long, averaging 1 cm. in breadth; peduncle rufo-tomentulose, 1 to 3 cm. long. Flowers yellowish; bracts linear, shorter than the lower part of the receptacle, 1.2 mm. long. Receptacle rufo-tomentulose externally, its lower portion ovoid-subconic, 2 to 2.5 mm. long, the upper part broadly bell-shaped, 2.5 mm. long, 3 to 5 mm. in diameter, pilose within; disc cup-shaped with a hispid margin; calyx-segments broadly triangular. Petals minute, 0.8 to 1 mm. long, 0.8 mm. broad, obcordate, with involute ciliolate margins; stamens glabrous, 5 to 6 mm. long. Style stoutly subulate, rarely exceeding the stamens; stigma obtuse or truncate. Fruit four- rarely three-winged, orbicular or oval, obtuse or emarginate at both ends, tipped by the persistent base of the style, 2 to 2.3 cm. long, 1.6 to 2.3 cm. broad, yellowish or brownish, thickly lepidote, the wings 7 to 9 mm. wide; pedicels puberulous or glabrous, lepidote, averaging 3 mm. long.

Sonder in Harv. and Sond., *Fl. Cap.*, ii, 509 (1862). Engler and Diels, l.c., 38, t. xii, f.a. (in part). Wood in *Trans. Phil Soc. S. Africa*, xviii, ii (1908), 156.

Eastern Region.—Natal, Port Natal, Guenzius (flow. spec.). Cooper, 2425 (1862) (fruit. spec.). Gerrard, 208 (fruit spec.). Inanda, Wood, 666 (normal and fasciated flow. spec.). Wood, 1041 (flow. and fruit spec.). Umzinyati Falls, Wood, 1041 (flow. and sterile spec.).

C. Gueinzii occurs sparingly in Natal and extends northwards to Delagoa Bay, where Forbes discovered it. I cannot entertain Engler's and Diel's view as regards the conspecificity of this species and C. holosericeum, two wholly distinct plants in my estimation, the latter easily characterised by the persistent fawn-coloured velvety indumentum on both sides of the leaves and the pubescent body of the four-winged fruit, while C. Gueinzii, whose upper leaf-surface is glabrous at maturity (except for the puberulous sunken midrib and lateral vein), has, moreover, wholly glabrous and lepidote fruit. The distribution of the species favours the latter view, for while C. Gueinzii is essentially Natalian, C. holosericeum occurs in the Transvaal, Portuguese East Africa, and slightly eastwards and westwards viâ Matabeleland to Angola, but is entirely absent from Natal. Both species are distinguished from the remainder of the South African members by their large, thickly coriaceous leaves, their prominently raised midribs, lateral nerves, and the parallel transverse nervelets which unite the latter.

4.—C. HOLOSERICEUM, *Sonder* in *Linnæa*, xxiii (1850), 44.

In habit, leaves and flowers very similar to C. Gueinzii, Sond., but with a denser foxy or fawn-coloured (silvery in nature according to Hiern) velvety indumentum, which persists on the upper surfaces of the leaves and is equally dense on the lower side, with scattered scales, *not* thickly lepidote. Fruit smaller than in the preceding species, ovate or elliptic, subacute and tipped by the base of the style, truncate or subcordate at the base, 13 to 20 mm. long, 10 to 16 mm. broad, its body densely puberulous and lepidote, the wings glabrescent, 3 to 5 mm. long; pedicel 1 to 3 mm. long, puberulous.

Harvey, *Thesaurus Cap.*, 47, t. 74 (1859). Sonder in Harv. and Sond., *Flora Capensis*, ii, 510 (1862). Lawson in Oliver's *Fl. Trop. Afr.*, ii, 430 (1871). Combretum Gueinzii, Engler and Diels, l.c., 38 (in part). Burtt-Davy in *Transvaal Agric. Journal*, v (1906-07), 424. Sim, *Forest Fl. Portuguese East Africa*, 63, pl. lxii, c (1909).

Kalahari Region.—Transvaal, Aapies Poort, Pretoria, Rehmann, 4217, 4218, 4224, 4712 (fruit and flow. spec.), Magaliesberg, Oct., Zeyher, 521, 575 (flow. spec.). On hills about Pretoria, 1230 m., Sept., McLea in *Herb Bolus*, 5642 (flow. and fruit spec.). Sanderson (immature fruit spec.). Louw's Creek and Hyslop's Creek, Barberton, 540-750 m., March-April, 1890. Galpin, 927.

Known in the Transvaal as "Rooibosch" or "Mookoodba" (Modjajies), and extending into Portuguese territory, where the rugged black bark of the species gives rise to the native—"M'bondo-m-nyama." Here it abounds on and below the Lebombos in Maputa and Marracuene, and according to Sim its timber is very hard and durable, but gnarled and unshapely. The species was also collected by Kirk at the foot of the Chiradzura Mountains, in Matabeleland by Oates and Baines, and westwards in Angola by Welwitsch at elevations of 1,500 metres, where the wood is used by the natives of Loanda for firewood. According to Hiern the wings of the fruit are a blood-red colour.

5.—C. ZEYHERI, *Sonder* in *Linnæa*, xxiii (1850), 46.

A small, unarmed, erect tree, 7 to 10 m. high, with whitish bark, and spreading branches; second and third year's branchlets more or less terete, greyish or brownish, prominently leaf-scarred, scaly-barked and glabrescent, the ultimate angular and ferrugineously tomentulose. Leaves crowded towards the ends of the twigs, alternate or opposite, (rarely ternately disposed), ascending; petiole 4 to 14 mm. long, stout, flattened and slightly grooved above, convex

* C. bracteoso, Brandis, affine sed foliis maturis rigidioribus subtus haud barbatis, bracteiis petalisque valde minoribus, staminibus longioribus recedit.

beneath, and like the twigs, covered with a rufous felt; blade elliptic or oblong-elliptic, subacute, rounded, or slightly emarginate, invariably rounded at the base, or slightly cuneate, 3.5 to 7.5 cm. long, 2.3 to 4.5 cm. broad, thickly coriaceous, traversed by a prominent midrib and five to seven pairs of principal lateral veins below, pubescent on both surfaces at first, eventually glabrescent and lepidote above, or the pubescence more or less confined to the midrib and the obvious reticulations, but usually persistent throughout on the lower side, the margin undulate and ciliolate. Spikes solitary, axillary, oblong-cylindric, densely-flowered, shorter than the leaves or equalling them, the axis and receptacle softly and yellowish pubescent, the flowers subtended by minute pubescent bracts. Receptacle 4 to 6.5 mm. long, externally lepidote and pubescent, fusiform below, campanulate-plate-shaped above, the calyx-segments broadly triangular and subacute. Petals minute, 1 mm. long, subspathulately clawed, with an obtuse or denticulate apex, yellowish, glabrous. Stamens 8 to 16, much longer than the petals (5 to 6 mm. long). Style slightly thickened towards the apex, equalling the stamens in length. Fruit large, four-winged, borne on a lepidote, pubescent or eventually glabrous stalk, 5 to 8 mm. long, roundish-elliptic, emarginate at both ends, 4.5 to 6 cm. broad, 3.5 to 4.5 cm. long, pale yellowish-green or ochreous, glabrous, shining and inconspicuously lepidote, the individual wings 1.7 to 2 cm. broad, cross-striate, easily splitting in the direction of the striæ, and with distinctly undulate margins.

Sonder in Harv. and Sond., *Fl. Cap.*, ii., 511 (1862). Harvey Thesaurus, *Cap.*, 48, t. 75 (1859). Engler and Diels, *Mon. Afrik Pfl.*, iii (Combret), 58 (1899). Burtt-Davy in *Transvaal Agric. Jour.*, iv., 838, t. 112 (1906), op. cit. v (1906-07), 424. Sim, *Forest Fl. Portuguese East Africa*, 63, t. 63, f.a. (1909).

Kalahari Region.—Transvaal, Magaliesberg, June, Burke (fruiting spec.). Burke, 519 (flowering spec.). In woods near Magaliesberg. Zeyher, 552. On hills near Pretoria, 1200 m., Oct., 1886. Bolus, 7765 (sterile spec.), 1230 m. McLea in *Herb. Bolus and Kew*, 5643. Hillsides near Barberton, Queensriver Valley, 600-750 m., March, 1906. Galpin, 878 (fruiting spec.). Barberton, Thorncroft (*Herb. Brit. Mus.*). Aapies Poort. Rehmann, 4220, 4226.

Engler and Diels also quote the following numbers, which are not at Kew:—Makapansberge at Streydpoort, Rehmann, 5472 (in *Herb. Berlin and Zurich*, Aapies Poort at Pretoria, Rehmann, 4222 and 4226 (*Herb. Zurich*). Boschveld, between Kameelpoort and Elands River. Rehmann, 4819 (*Herb. Zurich*). Rooiwal, between Elands River and Klippan. Rehmann, 4861 (*Herb. Zurich*).

Known in the Transvaal under the name of Zeyher's "Rooibosch," and in Portuguese East Africa by the natives as "M'bondo-m-hlope," which latter term, embracing also C. salicifolium, alludes to the whitish bark characterising these species. In the latter territory, C. Zeyheri frequents the Lebombo Range in Maputa and Marracuene, where the leaves attain a larger size, viz., up to 10 cm. long and 5 cm. wide. The species has also been found in Angola and Nyassaland by Welwitsch and Bellingham respectively. According to Sim (l.c.), the timber is hard and durable, but gnarled. Harvey's figure exemplifying this plant depicts the fruit as almost quadrate, but this is a misconception, as they are more or less orbicular in outline. *R. A. Dümmer.*

(To be continued.)

RANUNCULUS GLACIALIS.

Of all the species belonging to this genus the Glacier Crowfoot (R. glacialis) is apparently one of those with the widest distribution. In addition to the Alps of Central Europe, and the Pyrenees, it is found distributed over the whole of the Arctic regions of Europe, Asia, and America. Seldom found growing lower than 6,500 feet elevation, it is on the contrary more usually seen near the higher summits, reaching altitudes of over 13,000 feet in the Bernese Alps. The plants usually grow in rough, stony ground, often in the neighbourhood of glaciers, and in the crevices of rocks, where they receive an abundance of moisture from the melting snow.



[*Photograph by R. A. Malby.*

FIG. 56.—RANUNCULUS GLACIALIS ON THE GRUBEN ALPS IN THE VALAIS.

Although it is recorded as growing on calcareous rocks, R. glacialis is more frequently found upon the silica or micaceous shist in the Alps. With such a wide range, it is natural that this species should vary to a great extent. In the typical plant the lobes of the leaves are broad when fully developed, while in the extreme form, var. crithmifolius, the lobes are almost linear. The flowers also vary very much in colour, from pure white to cream and rose colour, suffused, especially on the underside, with purple. In an early stage some forms, var. holosericeus, are thickly covered with silky hairs, but these disappear to a great extent as the plant develops, although the sepals retain theirs for a longer period.

The illustration (see fig. 56) is reproduced from a photograph taken by Mr. Malby on the Gruben Alps in the Valais, and happily shows a beautiful group growing at an elevation of just over 9,000 feet in rough, stony ground. Here, where the water from the melting snow was percolating through the loose, rocky debris, might be seen large quantities of this lovely plant in all stages of growth. In height the plants vary from 3 inches to 6 inches or more, for the flowers expand soon after they push through the ground, and the plant keeps on developing, while the petals, assuming a dull, purple colour, often persist till the seed is formed. The plant has many thick, fleshy roots, succulent stems, and bears leaves which are deeply three-lobed with trifid segments. Of large size and full, round form, the beautiful white flowers have a substantial appearance, and are borne singly on long pedicels. Before opening, the buds, like the young leaves, have a silky appearance, being covered with numerous hairs.

On our way up to the haunt of R. glacialis we passed whole stretches of another charming member of this genus, R. pyrenæus. This latter plant is found much lower down, dotting the mountain pastures and rocky slopes with its beautiful white flowers. Of the two, the latter is the easiest to grow in this country; R. glacialis refuses to exist for long in these low elevations. *W. I.*

AMERICAN NOTES.

CARNATIONS.

Of last season's Carnation novelties, Benora has given general satisfaction, Rosette has done moderately well, whilst St. Nicholas—a scarlet variety—seems slow in coming into crop, and is not likely to displace Beacon, which is still the most popular variety of its colour over here. Among white varieties White Wonder is easily first among the older sorts, its most formidable rival being White Enchantress. In the pale pink class, Pink Delight is rapidly displacing Enchantress in the east; the latter is still the most popular in the west, though it will not flower so freely as Pink Delight. We are still waiting for a really good crimson variety; Fairy Fern, although freely-flowering, is small. The English Carola is being tried in one or two places over here. Messrs. Pattern & Co., Tewkesbury, Mass., have raised a variety called Princess Dagmar, which is not yet in commerce; it is the finest of its colour which we have seen. In yellow we have practically nothing of any value.

BEGONIA GLORY OF CINCINNATI.

This Begonia, raised by an expert grower, Mr. J. A. Peterson, of Cincinnati, has proved itself this year much more profitable than that old favourite Gloire de Lorraine. It commands a far higher market price, and many large growers are ceasing altogether to grow Gloire de Lorraine in consequence. Glory of Cincinnati (which has received an award from the R.H.S.) is rather more vigorous than Lorraine; the leaves also are larger, and the habit somewhat looser. The flowers are about double the size of those of the older sort, and it has been found that it stands the dry heat of the average American house far better than Lorraine. We understand that Mr. Peterson has raised a variety ahead even of Glory of Cincinnati, which will be placed on the market in the near future.

ANTIRRHINUMS.

These plants, which do so well in England, are comparative failures in America, owing to the hot, dry summers. They are, however, receiving more attention each year as forcing plants, and really wonderful spikes are produced by this method, finding a ready sale in the markets in winter and spring. Pink is the most popular colour, and white and yellow are the next in favour. The plants, which are propagated by cuttings and seeds, are grown in benches or beds in a house with an average night temperature of 45-50°, and make splendid progress. It is the general custom, in order to secure fine spikes, to reduce the number of shoots on each plant by pruning. *W. A. Craig. North Easton, Mass., U.S.A.*

THE MARKET FRUIT GARDEN.

Moribund Worcester Pearmains.

A recent unpleasant task has been that of pruning about 170 Worcester Pearmain Apple trees—unpleasant because they are such miserably hidebound and prematurely-aged specimens, and many of them badly cankered. Except for size, they might be 20 years old, yet they are only seven years from the planting. They were grafted on free stock, and are greatly inferior to other trees in the same field which were grafted on the Crab. But the main cause of failure, in my opinion, is that the scions for them were taken from trees none too vigorous. The fact is that the variety is worn out, and needs to be renewed by taking scions or buds only from exceptionally vigorous trees, and, I may add, from young trees. The variety is such an inveterate producer of short and forked growths, terminated with fruit-buds, that it is difficult to obtain from trees of any considerable age vigorous scions for grafting. I am convinced that the selection of specially vigorous trees for scions is of great importance. In my oldest plantation I have one tree of the variety Irish Peach, altogether different in habit of growth from any other of the same variety and vastly more vigorous, although there is no difference in the fruit. This tree is of a much more upright growth than the usual pendulous trees of Irish Peach, and the branches are much stouter. Now, in raising the trees, which were planted six years ago, some of the scions must have been taken from the exceptional tree, for, scattered about in the young plantation, there are 10 or 12 trees of similar habit and vigour. A large stock of Irish Peach of this particular strain would be very valuable.

Seeking Disabilities.

I wonder how long the present fad for packing Apples in non-returnable bushel boxes will last. Those who have adopted it boast of getting higher prices for boxed Apples than can be obtained for Apples in bushel or half-bushel baskets. But do they make sufficient allowance for the great increase in the proportion of fruit taken out to sell as seconds? Packing in boxes is, admittedly, useless without careful selection as to size and appearance, and numbers of Apples which would go well as firsts in baskets have to be taken out when the fruit is packed in boxes. But what strikes me most forcibly is that packers in boxes are going out of their way to assume certain disabilities which are unavoidable by our Transatlantic competitors. For ocean transport the latter must have a rigid and strongly-closed-in package, and this must be non-returnable. Moreover, they must pack with uniformity as to size of fruit, and, at least, in their opinion, they must ram their fruit in by allowing a bulge before putting strong pressure upon it. Growers in this country, with their short distances of transport to market, do not need any package more rigid than a basket, which they can get lent to them by a salesman for ¼d. to ½d., according to size, instead of paying 6d. for a non-returnable box. Rigid uniformity in size of fruit is not essential to them if they pack in baskets. Yet many are taking upon themselves the disadvantages incidental to ocean transport, even to the extent of imitating the bulge and strong pressure, which can hardly fail to bruise nearly every Apple in a box. The bruising thus caused must be worse than any that would result from a little looseness, when the rail journey is a short one. When bushel or half-bushel baskets are properly packed, with a little hay at bottom and top, strong cartridge paper around the sides, and tissue paper inside that, there is vastly less bruising than one is accustomed to find in American or Tasmanian Apples. Nearly every fruit in a case of Tasmanian Apples presented to me last year was bruised in four or five places, and barrelled Apples are also commonly bruised. Some of our growers are now using barrels for cooking Apples, as they can get empty sulphur barrels at a low price. If packing in barrels became common, however, new ones would have to be bought, as they are in the United States and Canada, at 1s. 6d. to 1s. 8d. each, and possibly the cost would be more in this country. For my own part, I prefer to pack, particularly dessert Apples, in half-bushel baskets, as bruising is less likely in a light than in a heavy package. *Southern Grower.*

HEREDITY AND MUTATION.

The following is a summary of the second lecture of the course on "Heredity and Mutation" which Dr. R. R. Gates is delivering at the Imperial College of Science, South Kensington :—

The essential feature of chromosome reduction is the segregation of the members of chromosome pairs, each of which enters a separate germ cell. There are reasons for supposing that the chromosomes differ to some extent in chemical composition, and stereo-isomerism of the chromatin molecule would seem to supply a better basis for explanation of chromosome individuality than the phenomena of liquid crystals which have been invoked for this purpose. The apparent fact that a longitudinal is different from a transverse split of a chromosome, however, leads to belief in the anisotropic structure of the chromosome body, and this may be accounted for by the phenomena of liquid crystals. The directive and controlling influence of the nucleus in the cell probably has its seat in the chromosomes.

Any view of chromosome individuality must allow of much interaction between the chromosomes of a given nucleus, and also between the chromosomes and the cytoplasm, especially during the period of mitosis.

If we assume that the chromosomes are unlike, then their behaviour furnishes a parallel to Mendelian behaviour, and the chromosomes may be treated as Mendelian characters. But any theory or explanation of unit characters must bear in mind that the organism as a whole is a unit, that organisms are not built in watertight compartments, nor are the chromosomes within separate compartments of the nucleus. A strict doctrine of the unmodifiability of unit characters might become as serious a bar to the progress of science as was the doctrine of the immutability of species.

Various experiments have shown that unit characters are not only variable, but can be modified by selection. Thus Castle, with 10,000 "hooded" rats selected in opposite directions, namely, for increase and decrease of pigmentation, was able in 12 generations to produce at one extreme an almost black rat and at the other extreme a nearly albino race, yet two stages in this series, namely, the "hooded" and the "Irish" rat, when crossed gave a simple Mendelian monohybrid ratio. The Himalayan pattern in rabbits appears to be a parallel case, behaving like an albino from which it differs quantitatively in pigmentation.

The supposition of East and others that size differences are due to the shuffling of a host of "genes for size," requires further data before it can be accepted. Such conceptions as are found in the idea that three or four independent factors are required for the opening of a Flax capsule are contrary to accepted knowledge regarding the physiological behaviour of organisms.

Segregation of characters is not confined to the reduction divisions, but various instances of somatic segregation are known. Something of a similar kind, which throws light upon the nature of unit characters, is found in the Hemps (Hibiscus cannabinus). In certain races of Hemp there is a sudden transition in one internode, from an undivided to a deeply lobed leaf, while in the related Cotton plant races with similar leaf differences show Mendelian behaviour when crossed. The experiments of Tower with Potato beetles (Leptinotarsa) show that the Mendelian behaviour of species-crosses can be modified according to the conditions of temperature and humidity under which the beetles are crossed. Such results make it necessary to emphasise the fact that the organism is the real unit, and that what we call a unit character is the resultant of innumerable activities and interactions between all the parts of an organism and its surroundings in every stage of development.

The Week's Work.

PLANTS UNDER GLASS.

By F. Jennings, Gardener to the Duke of Devonshire, Chatsworth, Derbyshire.

Plumbago rosea.—Old plants that were cut back in December have started into growth. Cuttings should be taken as close as possible to the old wood, and these cuttings should be inserted in pots in a compost consisting of finely-sifted loam, leaf-mould, and plenty of sand, and put in a frame with bottom heat in the propating house or stove. If three cuttings are inserted in a small 60 pot and then potted on in larger pots when well rooted they will make good plants by the autumn. This species may also be propagated successfully in the following manner :—Take old plants that have got past their best, shake off the old soil from the roots, then select the strongest roots and cut them into lengths, placing them in a pan or box in fine, sandy soil over a gentle bottom heat. Pot them up as soon as the young plants are large enough to handle.

Bouvardia.—Old plants of Bouvardia should be pruned and started in gentle heat. So soon as the shoots appear, reduce the ball of the plants and repot them in a compost of good loam, leaf-mould, coarse sand and fine bones. Place plants when newly potted in a moist atmosphere, and maintain a minimum atmospheric temperature of 55° to 60° until established, gradually reducing the heat afterwards. Bouvardias may be increased by the same methods as Plumbago rosea.

Caladium.—A batch of Caladiums should be started in a warm house, and so soon as the old tubers show signs of growth, shake the old soil from them, and, if there is any sign of decay, scrape the affected part and cover with powdered charcoal, sulphur or lime. Pot the plants in a compost of good loam, leaf-mould, silver sand, dried cow manure, with a little charcoal added. Plunge the pots in a hot-bed or stand them over warm pipes, and give but little water until the growths are well advanced.

Seeds.—Chinese Primulas raised from seeds sown at this period will be found useful for autumn flowering. Sow in pots or pans of fine soil, composed of loam, leaf-mould, and sand worked through a fine sieve. The seed should be only very lightly covered with the soil. Where batches of Celosia and Coxcombs are required, more seed should be sown, also of Streptocarpus, Gloxinias, Torenia Fournieri, Nicotiana Sanderi, and Francoa ramosa, which, if sown now, will flower early in spring.

Miscellaneous.—Plants of Begonia Gloire de Sceaux that have finished flowering should have their spent blooms removed and be stood in a warm house, where they will produce shoots for cuttings. Fumigate these with nicotine to destroy small yellow thrips before the young growths appear. Coleus thyrsoideus should also have its flower-spikes removed and be placed in an intermediate house or frame for stock. Cuttings of Coleus hybrids should be inserted for later batches. Ficus elastica, Genista, Streptosolen Jamesonii should also be propagated. A sharp look-out should be kept for any appearance of aphides on Carnations.

THE HARDY FRUIT GARDEN.

By B. Goodacre, Gardener to Sir Ernest Cassel, Moulton Paddocks, Newmarket.

The Alexandra Raspberry.—This autumn-fruiting Raspberry, although not generally grown, is, nevertheless, valuable both for dessert and culinary purposes. If a plantation is to be made this season, the work should be put in hand at once. Let the soil be deeply trenched, and during this process work in a liberal quantity of decomposed manure. The best method of training is in rows at a distance of 5 feet apart, placing the plants 2 feet apart in the rows. The canes should be cut down to the ground every year, and the plants will produce fresh vigorous shoots from the base. If these young shoots are too numerous, they may be thinned out, retaining the stronger and more

vigorous, and training them to the wire trellis or other support used for that purpose. If this Raspberry is to be successful, it must be lifted and replanted every season, when it may be expected to yield fruits from early August to the end of October.

NUTS.—Let all suckers be carefully removed, cutting them clean away at the base, then apply a liberal dressing of farmyard manure to the surface soil.

PREPARATION OF COVERINGS.—During wet and severe weather coverings such as nets, tiffany, &c., which have been stored since last summer, should be thoroughly overhauled, that they may be used in the case of late frosts occurring. These coverings are often found to form a harbour for insects, and it is a good plan to have them opened in some empty house or close-fitting, dry shed, and give the whole a thorough fumigating. Nets which are torn in a few places only may have the rents mended with fine tar twine.

FRUITS UNDER GLASS.

By JAMES WHYTOCK, Gardener to the Duke of BUCCLEUCH, Dalkeith Palace, Midlothian.

EARLIEST PEACH HOUSES.—The growth and foliage of the earliest-forced Peach trees are sufficiently advanced to permit of fairly-strong daily syringings with tepid soft water. The syringing will check aphis and red spider if it be supplemented occasionally by a very weak solution of Quassia extract or half a pint of Bentley's dissolved soft soap each in three gallons of water. The sunless and, in many districts, very wet weather has necessitated extra care and watchfulness on the part of the grower in seeing that too much fire-heat has not been employed, or the foliage kept constantly wet. Maintain a minimum temperature of 60° or a few degrees lower on cold nights. Syringe the trees once in the morning, damping the paths only in the evenings of bright days. Close the house early in the afternoon when the temperature is 15° higher than the mean, and syringe the plants freely. A selection of the shoots for laying in should now be made; endeavour to prevent the tree from becoming bare of young wood in the centre. Allow the shoot nearest to the base of last year's shoot to remain, also another half-way up, as well as the leading shoot. All those that are retained should arise from the upper side of the existing branches. When the fruit becomes as large as a Walnut it has reached the stoning period, and will remain stationary for several weeks, during which time the trees must not be subjected to high temperatures. Attend to the disbudding and partial thinning of the fruit in successional houses. It is probable that the borders will now need water.

TOMATOS.—Make a thin sowing of Tomatos for a main crop in well-drained pots or pans. Germinate the seeds in a temperature of 60°, and grow the seedlings on a shelf near to the roof-glass to prevent them from becoming drawn. Later pot them singly in 3-inch pots, or they may be pricked out in boxes filled with a moderately light soil, mixed with either leaf-mould or manure from a spent Mushroom bed. Grow the plants near the roof-glass. Tomatos set in their fruiting pots or boxes last month should be grown in a temperature of 60°, rising 10° with sun neat. Admit as much air as the outside conditions permit. The Tomato when at its fruiting stage will not succeed in a close, stagnant atmosphere.

PINEAPPLES. — Suckers which were transferred last September into 6- and 8-inch pots should be ready to be placed in the fruiting pots. The signs to be observed are chiefly concerned with the roots, which should be white, healthy-looking and well formed around the ball of soil. If they are not yet sufficiently developed, it will be well to wait a little longer, increasing the temperature meantime to a bottom heat of 85°, with more atmospheric moisture. This should produce the desired conditions. Before the rooted suckers are ready for potting, all necessary preparations should be made so as to avoid haste and confusion. The pots should be thoroughly cleaned, and suitably crocked—10-inch pots are the best for Queens, 11- and 12-inch for Rothschilds and Smooth Cayennes. The soil should be under cover; it should be fibrous in texture, and sufficiently loose for water to pass freely through. Before potting, the plants should be well watered, in order to damp the balls of soil. The surface soil of the balls should then be removed, the roots disentangled and the potting should be done firmly. If the Pine pit is provided with hot-water pipes for bottom heat, the plunging material should be turned over to the extreme base, adding whatever is necessary at the same time. The roof-glass and woodwork should be washed, and the walls lime-washed. The plants in pots should be plunged 2 feet apart each way, and a bottom heat of 85° to 90° maintained for the first few days. The house or pit should be kept rather close; the walls and other surfaces may be lightly sprayed to damp the atmosphere, but the plants will not require watering for some weeks after plunging. Even then the soil should not be allowed to become too wet. During March and April, a mean temperature of 60° will be sufficient, taking advantage of any bright sunshine to raise it 10° or 15°. The varieties Smooth Cayenne and Charlotte Rothschild, which are now bearing fruit, should be maintained in a temperature of 70°. In order to keep the atmosphere moist, the walls, &c., should be syringed, but the plants should not be watered, as a rule, when the fruit is swelling, though an occasional gentle application of weak guano water is beneficial. Fruiting Queen Pines will now be beginning to blossom, and during the flowering period the atmosphere must not be too moist.

THE FLOWER GARDEN.

By EDWARD HARRISS, Gardener to Lady WANTAGE, Lockinge, Berkshire.

PENTSTEMON. — Plants of border Pentstemons raised from cuttings inserted last autumn in boxes should either be potted or transplanted in a bed of soil in a cold frame. The best results are obtained when they are grown in pots, as, under this system, the roots do not experience much check at the time of planting, with the result that the flower-spikes are finer. The shoots should be pinched after the plants have recovered somewhat from the check caused by transplanting. Seeds sown now will provide plants that will flower in the autumn. Pentstemon barbatus may be increased by division, and the roots are now in a good condition for dividing. This plant flowers during the greater part of the summer and autumn, and is an excellent subject for the mixed border; the inflorescences are very useful as cut blooms.

MISCELLANEOUS. — All vacant flower-beds should now be well dug and manured, in preparation for the summer bedding plants. As soon as the weather is favourable, Tree Pæonies may be planted, but care should be taken to protect them against spring frosts, which easily injure the young growths. The Alpine garden should receive frequent attention; the plants should be thoroughly cleaned, and the ground well prepared, sprinkling with fine soil. Delicate plants should be protected in wet weather with small lights. Lay traps of Carrot and Turnip for woodlice and other similar enemies.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower to Sir TREVOR LAWRENCE, Bart., Burford, Dorking.

MASDEVALLIA TOVARENSIS.—Plants that have outgrown their receptacles may be divided and re-potted. If it is desired to increase the stock portions may be repotted singly in small pots, or several pieces may be placed together in the same receptacle to form small, neat specimens. The pots or pans should be about three parts filled with drainage materials, and on these should be placed a thin layer of Sphagnum-moss. The compost should consist of a mixture of good fibrous peat, small portions of Osmunda fibre, leaf-mould, and Sphagnum-moss in equal proportions, with small crocks and coarse silver sand added. Place the base of the plant level with the rim of the pot. Avoid pressing the materials too firmly about the roots. Water the plants with great care: any excess of moisture will cause the old leaves to damp off. It is a safe practice to sprinkle the surface of the soil occasionally until the roots are active and new leaves forming, when moisture may be afforded in gradually increased quantities. The plant should be wintered in the cooler part of the intermediate house, but during summer it grows best in a cool house.

MASDEVALLIA (CHIMÆRA GROUP). — The present is a good time to break up old plants and to increase the root space of all plants in the Chimæra section of Masdevallias, such as M. chimæra, M. bella, M. Wallisii, M. Backhouseiana, M. Roezlii, M. Winniana, M. Gorgona, M. Gaskelliana, M. Sanderiana, M. Carderi, M. Chestertonii, M. radiosa, M. nycterina, M. Houtteana, M. trinema (Lowii), &c. All these varieties grow best in shallow Teak-wood baskets; and as the flowers are produced like those of Stanhopea, from descending stems, no crocks should be used for drainage, a thin layer of coarse Osmunda fibre laid over the bottom bars of the basket answering the purpose well. The compost should consist of Osmunda fibre, A1 fibre, and Sphagnum-moss in equal parts, chopped rather finely and well mixed together. Only a moderate depth of compost is necessary. After the roots have been disturbed, it is unwise to give them too much water; but a sufficient spraying of clear rain-water to keep the compost moist is advisable. After plants are well rooted, if they are healthy, they can be well soaked two or three times a week, especially during warm weather. As the leaves are liable to become infested with small thrips and red spider, the plants should be taken down every bright morning, and well syringed on the underside of the leaves. An occasional sponging with a weak solution of "soft-soapy" water is also advisable. For the present, the plants should be suspended in a cool, shady part of the intermediate house, but in summer they do best in the house devoted to cool Odontoglossums. Generally speaking, they may be removed in the month of May.

THE KITCHEN GARDEN.

By JOHN DUNN, Foreman, Royal Gardens, Windsor.

SPINACH. — Make a sowing of summer Spinach as soon as the soil is in a suitable condition, in rows at 15 inches apart. When the plants are well through the ground, stir the soil freely between the rows with the Dutch hoe in order to promote a quick growth and destroy seedling weeds. This crop should be encouraged to mature in the least possible time, so that the ground which is at present occupied by winter Spinach may be available early for some other crop. Beds of Spinach from which supplies are being gathered should be cleared of decaying foliage and the soil stirred deeply with a hoe or a fork.

PARSLEY.—Make a sowing of Parsley to furnish plants that will supply leaves in early summer. Germinate the seeds in gentle heat, and, when the seedlings are large enough to handle, transplant them in boxes filled with fine, rich soil. Grow the plants in a cold pit, which should be kept close for a time, but afterwards admit air to keep them sturdy. They may be transplanted in a sheltered border very early in the season. Parsley in the open should have decayed foliage removed, and the roots dressed with a little artificial manure after the surface of the soil has first been loosened with the fork.

FRENCH BEANS.—Make sowings of French Beans at intervals of 10 days throughout the spring. Pots 8 inches in diameter should be employed, and they should be filled to within 3 inches of the rim with a compost consisting of two-thirds rich loam and one-third leaf-mould. Press the soil firmly and sow seven seeds in each pot, to be thinned to five plants when it may be seen which are the stronger. Plants raised from seeds sown a month ago should be top-dressed with fine, rich soil, and the shoots supported by a few twiggy branches inserted in each pot. Feed the roots on frequent occasions with weak, liquid manure, and syringe the foliage twice daily to prevent attacks of red spider. A night temperature of 65° will be suitable in mild weather.

CARROTS.—Plants which were raised from seed sown in frames in January are well above the ground, and fresh air should be admitted to prevent them from becoming drawn. Thin the plants to 4 inches apart, and water the soil afterwards to settle it about the roots, using soft water. Soot may be lightly dusted about the plants occasionally, as this will favour growth. If a cold pit is available, another sowing may be made to furnish roots for a succession. Old Carrots that are being stored should be examined frequently, with a view to removing new growth. The roots should be kept as dry as possible, and placed in thin layers, or they may ferment and become mouldy.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS, 41, Wellington Street, Covent Garden, London.** *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

Local News.—*Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.*

APPOINTMENTS.

MONDAY, FEBRUARY 24—
Surveyors' Inst. meet; Ann. Dinner at 7 p.m.

FRIDAY, FEBRUARY 28—
Roy. Inst. meet. (Lecture by Mr. C. T. R. Wilson.)

SATURDAY, MARCH 1.—
Soc. Franç. d'Hort. de Londres meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich—39·5.

ACTUAL TEMPERATURES:—

LONDON.—*Wednesday, February 19* (6 P.M.) Max. 40°; Min. 22°.

Gardeners' Chronicle Office, 41, Wellington Street Covent Garden, London.—*Thursday, February 20* (10 A.M.): Bar. 30·10°; Temp. 37°; *Weather*—Dull.

PROVINCES.—*Wednesday, February 19:* Max. 41° Brighton; Min. 27° Harrogate.

SALES FOR THE ENSUING WEEK.

MONDAY AND WEDNESDAY—
Rose Trees, Shrubs, Perennials, Lilies, Begonias, Gladioli, &c., at 12.30; at Stevens's Auction Rooms, 38, King Street, Covent Garden.

MONDAY AND FRIDAY—
Herbaceous Plants and Hardy Bulbs, at 12; Roses and Fruit Trees, at 1.30; at 67 & 68, Cheapside, E.C., by Protheroe & Morris.

WEDNESDAY—
Perennials, Border Plants, Hardy Bulbs, &c., at 12; Palms and Plants, at 5; at Protheroe & Morris's Rooms.
Nursery Stock, at The Nursery, Broxbourne, by order of Messrs. Paul & Son, by Protheroe & Morris, at 12.

THURSDAY—
Roses and Fruit Trees, at 1; at Protheroe & Morris's Rooms.
Nursery Stock, at Burnt Ash Hill Nurseries, Lee, S.E., by order of Messrs. B. Maller & Sons, by Protheroe & Morris, at 11.

FRIDAY—
Orchids, at 12.45, at Protheroe & Morris's Rooms.

The Inheritance of Fecundity.

Few problems are of more practical importance to the plant-breeder and stock raiser than those which concern the inheritance of the capacity for producing large numbers of offspring. Yet, notwithstanding the great commercial value that a knowledge of the mode of inheritance of fecundity might have, there is a remarkable lack of experimental data on which to found a serviceable working hypothesis.

We know, it is true, not a little with respect to the effect of cross-breeding in increasing the yield of certain plants, and we know also from Darwin's experiments that continued self-fertilisation results, in certain cases, in a striking reduction in the number of seeds. Even these well-known facts still await a scientific explanation, and beyond them our knowledge does not at present extend. Of a row of Peas, for example, we have no published information of the relative contributions made by the individual plants to the harvest. Nor may we say at present—even though it were shown that certain plants contribute more than their due share—that the degree of fecundity exhibited by individual plants is an hereditament. We are apt to assume that the fact of a plant yielding more than the normal quota of seed is to be attributed to specially favourable conditions, and to regard such disparities of yield as we may observe among a group of pure-bred plants as the consequence of lack of uniformity in the conditions of soil and of air to which the plants have been exposed. In the absence of exact knowledge derived from definite experiment, such opinions are beyond the pale of criticism. To discuss them in the light of general knowledge is but to waste time and intelligence.

What is required is a careful statistical inquiry into the facts. Such an inquiry is bound to be tedious, but it is bound also to lead to interesting results, and it might give us conclusions of the highest practical importance to horticulture and agriculture. Recent experiments on the fecundity of fowls appear to show that this character is no less hereditable than are those less elusive properties of the organism which are used generally by students of genetics as subjects for their inquiries. Mr. Raymond Pearl, to whom these experiments are due, has arrived at the following interesting conclusions with respect to the mode of inheritance of fecundity. A certain low average power of egg production depends on the presence in the hen of a single Mendelian factor, which he denotes by the letter L_1. Given the power of producing eggs, that is, given a normal female, the number of eggs produced in a year will depend on the presence or absence of this factor. If it be present the number will reach a certain maximum, e.g., a winter record of under 30 eggs. But for a bird to be a copious layer a second Mendelian factor must also be present. In other words, and denoting this latter factor by L_2, only birds of the constitution L_1 L_2 possess a high degree of fecundity. Such L_1 L_2 birds alone among the denizens of the fowl-run are capable of producing a winter record of more than 30 eggs.

Further, the mode of inheritance of these factors L_1 and L_2 is not identical, and therein lies the fact that the fancier has not succeeded hitherto in raising races of hens guaranteed to be prolific. As he has discovered, good layers may beget indifferent layers, and from indifferent layers may proceed good layers. This arbitrary and disobliging behaviour is to be attributed to the curious mode of inheritance of the factor for high fecundity. According to Mr. Pearl's observations the factor for femaleness (F) and that for high fecundity (L_2) cannot occur together in a sexual cell. The latter factor must therefore be supplied always by the male bird. Hence the task of the poultry raiser must be, first to obtain males and females pure for L_1, for that is the factor which lays, as it were, the foundations of fecundity, and, second, to see that the male birds are pure for L_2, the factor which builds high fertility on the basis of L_1.

REDUCTION IN NUMBER OF WOOD PIGEONS.—The Board of Agriculture and Fisheries desire to suggest to landowners, farmers, and gamekeepers in the South of England that a combined effort should be made in the last fortnight in February to reduce the number of wood pigeons in their neighbourhood. A special effort should be made to shoot them in the evening or when they are preparing to roost.

THE SURVEYORS' INSTITUTION.—An ordinary general meeting will be held in the Lecture Hall of the Institution on Monday, February 24, 1913, at 4 p.m., when a paper will be read by Mr. B. W. ADKIN (Fellow), entitled "Forestry Law." The following is a short summary of the principal points in the paper:—"Introduction."—The meaning of Forestry Law. Its application to the forest and to trees. "Forests or Royal Hunting Grounds."—The origin of Royal Forests. Those of them that remain. The meaning of the word "forest." The beasts of the forest. The beasts of the chase. The beasts of field and warren. "Forest Laws."—The object of the laws. Examples of the laws. The forest officers. The forest courts. Afforestation and re-afforestation. Gradual modification of the forest laws. "Laws as to Protection and Replanting of Trees."—The earliest reference to the subject. The Statute of Inclosure, 1482. The Statute of Woods, 1543. Other Acts of the Middle Ages. Acts of Hanoverian times. The Deer Removal Act, 1851. The Larceny Act, 1861. The Malicious Damage Act, 1861. Recent Committees and Commissions on Forestry. The Road Improvement Act, 1909. "The Enclosure of Forests"—History of enclosure. Statutes of Approvement. Enclosure with the consent of the Homage. Local and General Inclosure Acts. Resistance to enclosure. The Metropolitan Commons Act, 1866. Commons Preservation Society. The modern tendency for open spaces. Various statutes relating to the matter. "The Law as to Trees and Timber." Mr. DANIEL WATNEY'S paper on timber. The legal definition of of timber. The powers of a mortgagee as to timber. The position of the tenant for life. HONYWOOD v. HONYWOOD. DASHWOOD v. MAGNIAC. The ownership of trees on boundaries. Overhanging trees. Damage by felling trees. Trees adjoining highways. Trees in churchyards and on glebe. Noxious trees. Easements and trees. Fires caused by engines. The Railway Fires Act, 1905. The rating of woodlands. The paper by the late Mr. WILLIAM STURGE. The natural and unimproved state. The death duties on timber.

THE GERMAN EMPEROR AS AN AGRICULTURIST.—At the annual meeting of the German Agricultural Council the EMPEROR WILLIAM delivered an address on the results of land-reclamation experiments carried out on his estate at Cadinea. His Majesty gave statistics which showed that reclamation of the marshland on the estate had proved a financial success. He claimed, moreover, to have proved that agricultural production in Germany could be so increased as to satisfy the home demand not only for meat, but also for bread.

NORTH OF ENGLAND HORTICULTURAL SOCIETY.—The secretary, Mr. J. BERNARD HALL, informs us that the close of the second year of this society's operations shows a paid-up membership of just over 500 members, 16 affiliated societies, and a turnover of £650. The increase in members is nearly 50 per cent., whilst the number of affiliated societies has been doubled. The society is still handicapped by its heavy initial expenses, but in the coming year income and expenditure are expected to balance each other. Various special sub-committees have been appointed, including the new magazine committee, which will conduct the magazine on the "round table" method; there being sub-editors from each of the four principal committees, a chairman (Professor R. S. Seton), and a printing and advertisement secretary (Mr. T. H. Gaunt). The annual meeting was held at the Queen's (Midland) Hotel, Leeds, on Wednesday, February 19, at 5 p.m.

EDUCATIONAL COLONIES ASSOCIATION.—This association has been established with the object of finding means whereby students—such, for example, as those who have passed through a course at an agricultural college—may acquire practical experience in agriculture. The association requires such students to spend a certain time at its headquarters farm, and then proceed to farms or gardens whereat they may gain experience in some special department of agriculture. The hon. organizing secretary, J. W. PETAVEL, Esq., is anxious to get into touch with men who would take pupils on a basis of co-operation. The address of the association is 50, Goschen Buildings, Henrietta Street, London, W.C.

NEW ZEALAND PROHIBITION AGAINST CROWN-GALL.—The New Zealand Government has issued a proclamation prohibiting the introduction into the Dominion of any fruit or plants infected with the disease known as root-knot, hairy-root or crown-gall (Bacterium tumefaciens). If any plant, fruit, &c., affected is introduced or shipped to New Zealand, it and any wrappings, &c., will be reshipped or destroyed at port of entry. Reshipment, however, is conditional on the approval of the inspector, and, in the event of destruction, the fees for such destruction are payable by the person in charge of the consignment.

ARTIFICIAL VANILLIN.—Our well-informed contemporary, *The Chemist and Druggist*, gives a warning note to the users of vanillin in the following paragraph:—"Owing to the high cost of eugenol, it is stated that some of the makers of vanillin are seriously considering the advisability of manufacturing from cheaper phenol, so that it behoves those who use it in food-products to make inquiry as to any change in manufacture." Vanillin, as its name implies, is the crystalline substance deposited on the outside of the pods or fruits of Vanilla planifolia in the course of preparation for commerce. It is also found in other vegetable products, besides being produced artificially, chiefly from eugenol, which is the most important constituent of oil of Cloves. So that anything affecting the supply of Clove oil would naturally diminish the supply of vanillin; but, when phenol or carbolic acid is suggested as the substance to take its place, notwithstanding all the marvels of chemistry at the present day, it seems necessary that precaution should be taken, especially as the vanilla flavour for sweetmeats and confectionery is so popular at the present time.

BRONCHO GRASS IN SOUTH AFRICA.—Amongst interesting notes by Mr. JOSEPH BURTT-DAVY, F.L.S., in the December number of the *Agricultural Journal of the Union of South Africa*, is one on the Broncho Grass (Broncus maximus Defs.), which it is said is killing the Lucerne in Oudtshoorn, and is otherwise a troublesome weed, especially in regions of winter rainfall. In California it has monopolised thousands of acres of veldt, to the exclusion of other Grasses and herbage, and although a good winter grower, furnishing a quantity of winter green stuff, this Grass is not eaten by stock. As it becomes old, the long-barbed crowns get into the nostrils, mouths and eyes of the animals, often causing much damage, in addition to this it is injurious to the wool. From its hardy nature and drought-resisting qualities, it overtops and chokes out such of the finer and better Grasses, as make less rapid growth. Mr. BURTT-DAVY says, "It is the growth of Grasses of this character which has induced me to recommend drilling the Lucerne in rows about 9 inches apart, which allows a cultivator to clear out the Grass to better advantage."

THE JAPANESE LARCH.—Mr. W. H. BENNETT, forester on the Brackenburg Tower Estate, puts in a plea (in the *Quarterly Journal of Forestry*, January, 1913) on behalf of the Japanese Larch. Of this tree it is indeed true that "a favourite has no friends," so general is the condemnation now meted out to it. Mr. BENNETT, however, has compared its behaviour in the Cumberland Fells during the dry summer of a year ago with that of its European rival. He reaches the conclusion that, though the Japanese Larch should be discarded from clay soils, it should be retained on lighter soils of sandy texture, where, in his experience, it is succeeding very well.

THE WINTER GARDEN AT AVERY HILL.—The delay in re-opening to the public the L.C.C. Winter Garden at Avery Hill Park is causing some anxiety in the Woolwich district. At the London County Council, Mr. W. J. SQUIRES asked the chairman of the Parks and Open Spaces Committee what action, if any, had been taken to reinstate the Winter Garden at Avery Hill, so that it might be re-opened at Easter and enjoyed by the people of London, for whom it was purchased and to whose use it was dedicated for all time, but who, for the reason that the property was in want of repair, had been denied that pleasure for the past nine months. He also asked whether it was a fact that negotiations were being carried on between the Parks Committee and the Education Committee with a view to the Winter Garden, or any part of it, at Avery Hill being transferred to the Education Committee for the exclusive use and pleasure of the staff and students of Avery Hill College? Mr. J. W. LORDEN, chairman of the Parks Committee, replied that the method of dealing with the Winter Garden was still engaging the attention of the Parks Commitee. Estimates for the execution of the work required had been received. No communications were taking place between the Education Committee and the Parks Committee. Some time ago a suggestion was made by the Education Committee, but up to the present it had not been acted upon.

"SMALL GARDENS FOR SMALL FOLK."—This is the title of a charmingly-written booklet by EDITH LORING FULLERTON, an American authoress. It has been written at the request of Mr. W. ATLEE BURPEE, of Philadelphia. Among many good things, the advice about surface cultivation is so excellent and so interestingly put for young folks, that we quote it:—"Way down in the soil for a great distance there is moisture: it is where Mother Nature stores her spring and fall rains. The sun is ever drawing that moisture out of the soil, especially in midsummer during a drought. At such times the soil will become as dry as powder for a great depth, and, of course, plants cannot grow strong and husky then. 'How does the sun get that moisture?' you are wondering. Through tiny chimneys in the soil, only they are so close together and so small we cannot see them with the naked eye. There are the poor little plants with their roots among those chimneys and the moisture coming up from below (for, like smoke, 'it goes up the chimney just the same'), but it goes by them so fast they cannot get any of it. But we are going to help our plants by keeping that moisture just under the surface where the roots can use it; we are going to put a brick over every chimney so the moisture cannot get out. Now you think I *have* set you a task! Remember, these chimneys are teen-tiny, and a grain of dust will fill the top. But the sun is ever pulling and making new ones, so we must close these as fast as they form—well, we are going to 'cultivate.' That's what farmers, good farmers, are always doing, and, do you know, the funny part is they think they are just keeping the weeds down and don't know they are closing the chimneys and keeping that fine cool soil moisture for the roots. But we know, so we are going to be better farmers and gardeners than they are. Now you have learned one of Mother Nature's secrets, and she has no end of them. She is a wise old lady, too, for she does not tell her secrets to those who do not ask of her, and sometimes we even have to tease a bit to learn them."

APPLES FOR S. AMERICA.—Vigilant Canada is turning her eyes to South America, and particularly to Brazil and the Argentine, with a view to developing an export trade. The *Canadian Horticulturist* (January, 1913) cites the Trade Commissioner's report on the promising nature of the field for export offered by South America, and estimates that it ought to be possible to sell 100,000 barrels in the season, from October to March. It appears that the demand is for first-class fruit packed in cases rather than in barrels, and that Canadian shippers will be compelled to export viâ Liverpool or Southampton. Pears, also, are in demand in the markets of South America.

ERADICATION OF MOSS.—The Cornwall County Council Report on Agricultural Experiments, 1911, recommends a dressing of 6 cwt. of superphosphate, applied about the end of February, as an effective means of destroying Moss in pasture. The Report, which is summarised in the *Journal* of the Board of Agriculture (November, 1912), attributes the action of the dressing to the acidity of the superphosphate. Experiments by other observers show that potassium carbonate may be used for this purpose; but the substance which is most effective is probably green vitriol (ferrous sulphate). This material, applied at the rate of 1½-2 cwt. per acre, is generally effective; although it is necessary in some cases to repeat the dose. Other substances which, according to BOURCART, are good Moss destroyers, are copper sulphate 2 per cent. and nitrate of soda 10 per cent.; the mixture sprayed on the meadow at the rate of about 70 gallons per acre. The advantage of liming mossy land is so well known that it need not be insisted upon in the present note.

THE STERILISATION OF SEEDS.—Numerous methods are in use for destroying the micro-organisms which occur on or in the coats of seeds. The most general method consists in washing the seed with an antiseptic, such as corrosive sublimate. A new process, which appears to give yet more satisfactory results, is described by Messrs. PINORY and MAGRON in the *Bulletin de la Société Botanique de France* (vol. 59, 1912, p. 609). This process, which has been employed also by others, consists in immersing the seeds in commercial hydrogen peroxide. According to the observations of the authors cited, hydrogen-peroxide is efficacious in destroying micro-organisms, and produces no harmful effect on the seeds, even though the latter be soaked in it for many hours. Messrs. PINORY & MAGRON state, moreover, that hydrogen peroxide exercises an accelerating influence on germination. Peas treated with the reagent began to grow a day-and-a-half before similar untreated seed, and seed of Orobus tuberosus treated previously with peroxide germinated in 8 days as against 28 days taken by untreated seed. These facts, if they prove to be generally true, are of considerable importance, not only from a scientific and theoretical point of view, but also from that of practice. To give but one illustration: the seeds of many Grasses germinate with extreme slowness; if they could be made to germinate in the course of a few days, not only would time be gained but loss from birds and ground animals would be reduced

FORESTRY APPOINTMENTS.—Dr. AUGUSTINE HENRY has resigned his readership at Cambridge, in order to take up, on April 1 next, the professorship of forestry under the Irish Department of Agriculture at the Royal College of Science, Dublin.

———The Forestry Committee at Cambridge have appointed, with the approval of the Board of Agriculture and Fisheries, Mr. CHARLES HANKINS, forester to Lord CADOGAN, as adviser in forestry.

VEGETABLE OILS.—Essential oils used in perfumery have advanced considerably in value, and especially Attar of Roses. The following list of oils and their sources appeared in a recent issue of *Knowledge*:—Turpentine, Pinus Australis and Pinus taeda; juniper, Juniperus communis; nutmeg, Myristica fragrans; cassia, Cinnamomum cassia; cinnamon, Cinnamomum xylanicum; camphor, Cinnamomum camphora; mustard, Brassica nigra; rose, Rosa damascena; bitter almond, Prunus amygdalus var. amara; lemon, Citrus medica; orange, Citrus aurantium; bergamot, Citrus bergamia; rosemary, Rosmarinus officinalis; lavender, Lavandula vera; peppermint, Mentha piperita; eucalyptus, Eucalyptus globulus; bay, Pimenta acris; and cloves, Eugenia caryophyllata.

ARSENIC IN PLANTS.—The very comprehensive investigations of Messrs. JADIN and ASTRUC, which are summarised in the *Pharmaceutical Journal* (January 18, 1913, p. 63), indicate that compounds of arsenic occur in all species of plants. Among the species which have been analysed are parasitic plants—Viscum, Orobanche, Cuscuta, and others—and in all arsenic has been discovered. The fact is interesting inasmuch as a parasitic plant such as Viscum must derive this substance from its host. The authors incline to the view that arsenic plays an important, albeit at present obscure, part in the vital activities of protoplasm.

JAYSINIA BOTANIC GARDEN.

IN Samoens, a small town in the Vallée du Giffre, some 30 miles from Geneva, and not far from Chamounix, in Savoy, this most interesting garden is situated. With the exception of trees and shrubs for shelter and effect, it is almost entirely devoted to Alpine and herbaceous plants. Its altitude of 2,400 feet above sea level renders it especially suitable for the cultivation of plants from the higher elevations of the Alps. The hill on which the garden stands was formerly a waterless, arid waste of rocks, covered with a scanty, shrubby vegetation. The ground, about seven acres in extent, was bought by Madam Cocnacq (née Jay), a native of Samoens, with the idea of making it into a public park, and M. Allemand, the well-known landscape gardener of Paris and Geneva, was entrusted with the work of laying it out to the best advantage. Instead of a park only, he made it into a beautiful and picturesque garden, built out of the natural rock, with a broad avenue leading from the entrance gate to the top of the hill, a rise of some 240 feet. On the way up we pass rocky bluffs and banks, grassy slopes full of rare plants, and a mountain torrent spanned by bridges. The bridges and garden seats are clever imitations of rustic work in iron and cement. The waterfall and rocky pools have a natural and charming appearance, and are supplied with water at the rate of 1,500 litres per second, which is brought some two kilometres from a neighbouring valley. This supply is also available for the many hydrants in the garden.

At the top of the garden are the ruins of a feudal castle, whose history dates back to the fifteenth century. The castle has been renovated to a certain extent, and terraces have been constructed in front of the ruins. A magnificent view of the town of Samoens, the Vallée du Giffre, and the surrounding mountains is obtained from this point of vantage. One of the most beautiful views is that looking up the Val de Oddaz towards the mountain of the same name, which is about 8,000 feet high, while on the right of the valley Mt. Criou towers abruptly to an elevation of over 7,000 ft.

The garden is divided geographically into 25 parts, representing the vegetation of the principal mountain ranges of the world. A large part is devoted to the Alps from Nice to Trieste, sub-divided into the Alpes Maritime, Dauphiny, Savoy, Switzerland, Piedmont, Lombardy, Tyrol, and Eastern Alps. Other divisions are allotted to the Pyrenees, Appenines, Corsica and Sardinia, Vosges, Cevennes, Jura, Carpathians, Balkans, Caucasus, Himalaya, China, Japan, North and South America, New Zealand, Arctic regions, Siberia, and Scandinavian Alps, the last three at the top of the garden. A large part is also devoted to the granite Alps, the rocks for which were brought from the Valley of Chamounix, as was also a quantity of granite debris for plants which are partial to this material. This section of the garden, consisting of a number of pinnacle-like rocks, many of large size, is a distinct feature, which does not commend itself to all critics, although designed to imitate the peaks common in the granite Alps.

About half-way up the slope is a quaint little chapel (fig. 57), some 300 years old, making a charming picture in the foreground of a view looking up the valley towards the Pointe de Salles and the village of Sixt. *W. I.*



[*Photograph by R. A. Malby, F.R.P.S.*

FIG. 57.—JAYSINIA BOTANIC GARDEN: SHOWING THE GIFFRE VALLEY TOWARDS SIXT.

FLORISTS' FLOWERS.

PERPETUAL CARNATIONS AND MENDELISM.

IF the student of Mendel, on applying his system to Perpetual Carnations, ever comes to the conclusion that the great naturalist's theory does not apply to Carnations it will be because the first superficial examination of the results of crosses between Perpetual Carnations (if one confines one's attention to the flowers of resultant seedlings) do not appear to conform to any large extent with Mendelian laws.

If I take at random, for instance, six crosses from our pedigree book, here are the results, omitting the fairly high percentage of singles and very poor flowers which one naturally obtains from Carnation seed:—

Enchantress × *Enchantress (flesh pink).*—Orange-scarlet-crimson large, crimson small, crimson poor and weak habit.

Victory (scarlet) × *Enchantress (salmon-pink).*—One seedling like Helen Gould, one salmon-rose of May Day colour, one scarlet like Victory.

Harlowarden (crimson) × *Enchantress (flesh pink)* gave one crimson, one Lawson-like variety, one light Enchantress from poor flower, one cerise (large), one scarlet (large but slow grower), one salmon-red Enchantress-like flower, one violet.

Mauvina (mauve) × *White Perfection (white)* gave one pure white, one pale mauve, one salmon-rose, one purple.

Mrs. Burnett (salmon) × *Aristocrat (cerise)* gave one cerise, one pale pink, one scarlet, one red, one salmon, one flesh pink.

Enchantress (flesh pink) × *Mrs. Burnett (salmon)* gave two whites (very fimbriated), two salmon-pink.

It would appear from the flowers of these crosses that, although one can occasionally trace the parentage, like does not produce like to any extent, and that the results are a disorganized jumble; but one who knows his Mendel will know that his laws are not confined to the first generation, and this is just where the first stumbling block appears, for what is the first generation in Carnations?

Raisers have been breeding for a century from a stock which originated from the French Remontant Carnation, but even this was not the first generation, and my point is that a true strain has since then not been obtained. In the case of Enchantress × Enchantress not even one Enchantress was obtained.

The British raiser and the British public have always looked at the flowers of a Carnation; but, after all, is not habit of plant as of much or more importance? We have lots of good varieties which give good flowers, but the list of sorts of Perpetual Carnations which have good flowers and a first-class habit is a very limited one.

Let us, then, pay more attention to habit, and we shall see how like does produce like to a very marked degree. I have been especially struck with the dominant way that both Britannia and Lady Alington and, to a lesser degree, direct crosses from Mrs. Lawson and Enchantress, if used as seed parents, influence the habit of the progeny. During this past season I counted the seedlings from a pod on Lady Alington; over 60 per cent. were in habit almost identical with the original. Now, Lady Alington is a seedling from Britannia, and closely resembles it, except that it is of quicker growth, hence Mendelism is again confirmed in the high number of seedlings in the second generation from Britannia, which are like the two previous generations. Had Lady Alington been of different habit from Britannia, one is safe to say the seedlings referred to would in no way be represented by the high percentage of the Lady Alington-Britannia type.

I am a firm believer in Mendelism, not from my experience in seedling Carnations only, but from the results I have observed with other plants, especially seedling Orchids. By observation one can usually see the parentage of simple crosses between natural varieties of Orchids, because in their natural habitat one fixed or pure strain of a variety remains fixed; then, if we breed from these clean strains there is no "recessive" blood to throw back to, hence like produces like, and the immediate parentage is almost invariably apparent.

The Cyclamen is another plant with practically a clean strain. I have noticed in Cyclamen that Mendelism is entirely confirmed, both in colour and form of flower, as well as in variation of foliage and habit of plant. Salmon King was obtained by pollinating a flower of giganteum type (rose colour) with the small-flowered Salmon Queen. As one might have expected, the results were Salmon Kings, Salmon Queens, and giganteum rose colours, and even a few inclined to throw back to the Persicum type.

To return to my point, however, I must admit that, for practical purposes, so far as flower-colour in Carnations is concerned, Mendelian results are hard to establish; yet, with respect to habit, Mendelism is of the greatest value to us. But, although his theories are of great service to us, I never learnt from him one important point which I learnt from experience, viz., that the seed parent dominates the habit and the pollen parent the colour of the flower of the resulting seedlings. *Laurence J. Cook, Bush Hill Park.*

CHRYSANTHEMUM MRS. J. THOMPSON.

For a late white Chrysanthemum the variety Mrs. J. Thompson is hard to beat. From a small batch of plants we have cut an immense quantity of splendid flowers of fine substance and purest white. The plants throughout their season of growth are very sturdy and strong. The variety should be propagated early, and have a good season of growth. Last year we stopped the plants twice. A change of stock is desirable, for cuttings from the base are very shy in appearing, and this variety has a tendency to damp whilst being propagated. Potted three together in a 16-size pot, and disbudded to one bloom on a stem, they make good plants. For all floral purposes the blooms are splendid, whilst for grouping the plants are eminently adapted. *Edwin Beckett.*

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

Carnation Propagation.—It is my experience that certain Carnations can be rooted in less than a fortnight, but not all. On December 12 last I inserted 26 varieties in 3-inch pots, four cuttings in each pot, which were plunged half their depth in a layer of leaves 1 foot deep, with 3 inches of ashes on the top, in a frame in a Melon house. The house has a south aspect, and the temperature is 55° at night and 60° to 65° in the day, with a rise or fall according to the weather. The frame was kept closed and exposed fully to the light. On December 24, Hon. Lady Nield, Carola, R. F. Felton, and a few other varieties were rooted. All the cuttings had made roots, and were transferred from the frame within a month, and were potted singly into 3-inch pots. Mrs. Burnett, Britannia, Carola, Hon. Lady Nield, Scarlet Glow, and R. F. Felton were pinched on January 22. Roots are growing freely round the sides of the pots. The cuttings should be about 4 inches long, strong, short-jointed and healthy. The quicker the cuttings are rooted the better, as when the plant is pinched there is a better break and stronger growth. *A. Slater, Stillorgan Park, Dublin, Ireland.*

———The safer method is to strike the cuttings in a closed case in sand. They should not be watered or damaged in any way after the initial watering. For Mr. Coates's information, I may give my experience as follows—I filled my propagating case for the third time this season on January 6, and concluded that all the cuttings had formed roots on January 20, when I removed the glass covering preparatory to potting them off, which was done on the 27th ult. Under this method, after the turn of the year, with properly-selected cuttings and a bottom heat of 70°, I can depend on having rooted plants in 14 days. After that time the top of the case should be removed and the plants potted in from four to seven days later, and placed on a shelf in the propagating house. When they have rooted freely, they may be removed to the Carnation house and placed on a shelf close to the roof-glass. After the removal of the glass the cuttings flag if they are not rooted, whilst if they are rooted and allowed to remain too long before being potted, they damp off. *W. M. Macdonald, Mount Melville Gardens, St Andrew's, Fife.*

———I do not agree with Mr. Hart in plunging the cutting pots in sawdust. I have tried that method, but I have found on turning the cuttings out that fungus from the sawdust had penetrated the drainage, and caused injury to the young roots. Cuttings dibbled in a propagating case filled with equal parts loam and silver sand, passed through a fine sieve, having a temperature of 55° to 60°, and a bottom heat of 65°, root readily in 26 or 28 days, but a higher temperature results in weak and spindly plants. I quite agree with Mr. Hart's methods of cultivation, save the final potting. If he used a good, fibrous, yellow loam with the other materials he mentions he could dispense with leaf-mould. My experience is that a moderately heavy soil, provided mortar rubble be added in sufficient quantity to keep it porous, and firm but not hard potting, results in sturdy, short-jointed plants that produce large blooms on stiff stems, whilst the calyces are not so likely to split as when light soil is used. *A. B.*

Artificial Roses at the Exhibition.—One cannot uphold the policy of the Royal Horticultural Society and the council of the International Exhibition in permitting exhibits of artificial Roses—in another word "Millinery"—at the shows held at Holland House and Chelsea. It used to be, and may be now, a rule of the R.H.S. that all dried or dyed flowers or foliage would disqualify an exhibit in respect to any award, yet at the shows mentioned there were exhibits of so-called "preserved Roses," and at Chelsea a large silver medal was awarded to such. The tale told is that these flowers are real, but are grown in South Africa (sometimes "America"), that they are dried after being pulled to pieces, then remade and artificial stems put to them, and that they will keep good for two years of more. So plausible is the story that clergymen will wear them in their button-holes, but when told that the flowers are more suitable for their wives' bonnets they appear surprised at the suggestion. These "flowers" are generally exhibited in vases as used for an exhibit of natural Roses, and, where possible, placed between exhibits of the latter. During the show customers are touted for, and a good business is done. The tent is well littered with cardboard boxes and tissue paper. Were a nurseryman to have some cases of flowers on his stand he would have no difficulty in selling them; in fact, would do good business. Yet this would be prohibited! At some of the horticultural shows held in connection with the county agricultural shows the nurserymen objected to stage their exhibits if these artificial Roses were permitted to be sold in the tents, and their protest was upheld. The result was that when these preserved flowers had to make their own shows elsewhere than in the tents the sales were almost nil. *Provincial Exhibitor.*

Plants in the Antarctic Continent.—In the report of the discovery of coal plants in the Antarctic continent, reported in the *Daily Telegraph*, February 18, we have a corroboration of the theory that this continent enjoyed more than once a temperate climate, and that it was united to the continents of the southern hemisphere. It was probably similarly united in much later times than the carboniferous epoch, and for two reasons. There are many living species of genera common to two or all three continents. Perhaps the family Proteaceæ is one of the widest in distribution. Of familiar genera, Fuschsia and Calceolaria now have their home in South America, but two species of each reappear in New Zealand. Pelargonium is represented in South Africa and Australasia. Restiaceæ also have genera at the Cape and in Australia, but no species is common to both. Oxalis, Drosera, Lobelia, Gunnera, and Lomaria, appear in all three continents, as well as Proteaceæ. If we now turn to the ocean, we find that the 2,000 fathom line unites Australia and New Zealand with Africa. The northern boundary runs in a wavy line between the 30th and 45th parallels of south latitude, i.e., considerably north of Kerguelen Island, until it reaches South Africa. South of Cape Horn the 2,000 fathom line connects the Antarctic continent with Graham Land and South America. The 2,000 fathom ridge also connects New Zealand with Western South America; 3,000 fathoms are only found in two small areas, one on either side of the meridian of the southern extremity of South America. Lastly, the 1,000 fathom line reaches to the north of Graham Land, i.e., to latitude 60°, Cape Horn being on the 55° of latitude. Hence the discovery of coal plants in both expeditions, viz., Shackleton's and Scott's, is a proof of the possibility of the Antarctic continent having extended to and united all the three areas, Australisia, including New Zealand, South Africa, and South America. Similar reasons lead me to regard certain existing floras as having descended, not only in time, but area, from the miocene floras of high latitudes. Thus, on the west coast of Greenland (70° N. lat.) a fossil flora exists, including the Walnut, Pine, Magnolia, &c. Even at Grinnell Land (60° N. lat.), off the west coast of Greenland, are the Norway Spruce, Taxodium distichum, and Sequoia, &c. On more southern

latitudes miocene floras have been found at Colorado, Oensingen in North Switzerland, where 465 species are recorded, of which 166 are trees and shrubs, e.g., Sequoia, Liriodendron (Tulip tree), Maple, Plane, &c. Another site is at Mull, and again at Bovey Tracey in Devonshire, where Sequoia again occurs. Comparing members of the miocene flora, we find the genera still living in certain longitudes, down which the plants travelled from a general Arctic flora, when the cold increased, and such as could spread did so where land was continuous, till they settled on or about the 40th parallel of latitude. Obstructions, such as the mountains of North-west America and Scandinavia, and of the sea on the south of Greenland, prevented a continuous miocene flora from being formed all round the world. Japan and East North America are the two most characteristic areas containing the modified descendants of the survivals of the miocene Arctic flora. The following are well known types common to both countries:—Magnolia, Nelumbium, Ampelopsis, Æsculus, Wistaria, Cassia, Hydrangea, Diervilla, Catalpa, Phlox, Musa, Taxodium, Pinus, Juglans, &c. *George Henslow.*

Calyx Bursting in Carnations. — The bursting or splitting of the calyx is one of the greatest defects to which the Carnation is subject. It is chronic and incurable in some varieties; in others it is the result of adverse conditions, unfavourable weather, or, not seldom, of defective cultivation. In Malmaisons the defect is habitual, and these varieties are rarely known to produce a perfect or non-splitting calyx. A combination of circumstances is responsible for the defect. The calyx is unusually short, with small, incurving lobes or divisions, and the whole flower is of exceeding fulness: this latter characteristic is, to some extent, the result of severe disbudding. If cultivators were to permit all the flower-buds to develop, the bursting would be limited, so far as the lateral or secondary buds are concerned. Hence, in some degree, the craze for large size is responsible for the fulness of the flower, for its lack of symmetry and contour, and for the defect of which we are speaking. To produce a flower without these defects it would be necessary for the hybridiser to breed a new type; i.e., a flower from which all the smaller, central petals had been eliminated, and which had a longer, more cylindrical calyx. The variety possessing a crowd of small petals in the centre of the flower is an inferior one, and unpopular with the cultivator or cross-breeder. This defect is likely to be reproduced in the progeny, though susceptible of elimination in subsequent generations by the rejection of all such plants, either as pollen or seed parents. Conversely, the variety having large, uniformly-sized petals bears the imprint of superiority. In this type there is usually a long tube-like calyx, which permits of the petals extending in a vertical direction, raising themselves well above the calyx lobes before attempting any lateral development. Such flowers as these rarely burst, and, all other conditions being equal, are worthy of the attention of the raiser of new varieties. Equally notorious as calyx-bursters are those varieties of Carnations characterised by a comparatively short calyx and pear-shaped flower-bud. In these varieties the opening at the top of the flower resolves itself into the merest "eye," and its closed condition, in conjunction with the strength of the contracting calyx lobes, is a formidable barrier to the egress of the petals. In these circumstances the continuous expansion of the petals within the bud results in the rending of the calyx from top to bottom. Moreover, it is accentuated by the severe disbudding which the demand for long-stemmed flowers has rendered necessary. The varieties described represent to some extent the habitual calyx-bursters, which are tolerated in many cases for their colour alone. With the advent of varieties of identical colour and without this defect they will of necessity go to the wall. Careful and systematic cross-breeding should be resorted to in conjunction with an intelligent knowledge of what is most desirable. There are, however, other contributory causes of calyx-bursting, chiefly cultural and climatic. For example, the Perpetual-flowering Carnation, when permanently grown under glass in a pot or on a bench, may be entirely immune from bursting, while the same variety grown partly in the open and partly under glass will give a large number of calyx-bursters in its first crop of flowers. These are usually the product of a slow development in the open air; in the second crop (the products of the glass-grown plant) the defect may be absent. The disparity is explained partly by the more attenuated growth of all parts of the plant when grown under glass, and partly by the steady, continuous growth, without a check, which can be obtained indoors. The plant partly grown in the open air is exposed to many vicissitudes, some of which occur during the nascent period of the flowers. The bursting may also be proportionately increased by the size and vigour usual in the first crop of flowers; and unmistakably a cold, wet, sunless season has also a marked effect in this direction. Quite an exceptionally large percentage of Carnations are bursting this season, a direct outcome of the wet, cold weather, coupled with interrupted development at critical moments. A loss of root-fibres, owing to the prolonged rain, may also have contributed. In like manner, absence of sunlight and sun-heat, and the dull, shortened days of winter are barriers to the continued progress of the plant. Each in its way has a prejudicial effect upon the flower-bud; either it bursts or, worse, it completely splits down the side. The variety which flowers in June, under ideal climatic conditions, is almost invariably an incorrigible calyx-burster in December. Hence, no one set of conditions is responsible, but many contribute to the one result. In certain circumstances, e.g., adverse conditions of season or climate, the cultivator is completely handicapped, and to the defect already mentioned must be added the disadvantage of poorly-coloured, more or less anæmic flowers. While this is beyond his control, however, he need not for ever endure the habitual bursting of his flowers. By observation, by experiment and by cross-breeding of the finer types which do not show this defect he may hope to produce a race in every respect perfect. "Union is strength": and practice should combine with science in the pursuit of this most worthy desire, with no small prospect of a speedy fulfilment. *E. H. Jenkins.*

The Heather Beetle (see p. 383, Nov. 23, 1912).—With reference to my note regarding the above, Lord Dalkeith writes to me as follows:—"It may interest you to know that on the Duke of Buccleuch's Dumfriesshire moors a large amount of Heather has been attacked by this beetle. In one case almost the whole of one beat is very badly attacked, and in another case a considerable area of another beat. In both of these instances the Heather was burned the next spring, and has come away very well; but where it is attacked in small patches amongst Bent or Grass it is often not noticed, and in those cases is, I think, very likely entirely killed. I think myself that the Heather beetle has been doing damage for a longer period than most people think, but being only on a small scale it was not noticed and, when noticed, was attributed by keepers to frost. It would be interesting to know whether the attacks are worse on ground with a heavy stock of sheep or where there is only a light stock or no stock at all. In the worst cases we had, the ground is more lightly stocked with sheep than on the rest of the moors, but I doubt myself if this had anything to do with it, and all the Heather attacked was in a healthy condition and not very old." I noticed that you omitted from my original note the scientific name, Lochmœa saturalis, and also the observations that the disease had probably appeared in Kent. *W. D. Webster, Regent's Park.*

Fruit and Farming in 1912 (see p. 68).—Mr. Norbury takes a very gloomy view of the results of 1912 from a farming and fruit-growing aspect. I do not agree that the quality of all corn was bad, although the yield was. Wheat grown here sold for more money last year than it did in 1911, owing to the fact, perhaps, that it was harvested pretty well. In this locality, where Wheat is well grown, the yield was but 32 bushels per acre as compared with 40 bushels in an average year. Barley, too, was much better than was anticipated, and made remunerative prices. Oats were distinctly bad. Hay was not nearly so bad in quality as it was with Mr. Norbury. Roots are remarkably heavy crops, so that there is plenty of feed for sheep. I fear, however, that lambs will be especially few in number. The exceptionally wet month of August is blamed for the scarcity of twins as well as for many barren ewes. It is my opinion that Apple-growing is being overdone in this country, for the more trees planted the less prices will the fruits obtain, no matter what their quality. Surely there never could be a worse season in that respect than the last. Even now the price of English Apples is very low. Where, then, is the good result of storing even good fruit of Bramley's Seedling? I do not agree that the inferior fruit sent to the markets is the sole cause of low prices. The question of supply and demand is the crux of the whole question, as it is in the corn and cattle markets. I need hardly say that I do not agree with the marketing of inferior produce, but with improved methods of culture we shall see fewer bad samples in the near future. In spite of the great increase in the number of Strawberry plantations that fruit still pays to cultivate when none but the finest berries are marketed. The same remark applies also to Black and Red Currants. With regard to the Loganberry, this is a peculiar fruit; in some localities it is highly appreciated, whilst in others it has no market value whatever. *E. Molyneux, Swanmore Park Estate, Bishop's Waltham.*

The Corsican Pine.—The quality of timber depends upon the age of the tree, a suitable soil, and situation, but I know of nothing that would improve the quality of Pinus Laricio timber. I believe the largest Corsican Pines in the country are growing on this estate; the trees are some 80 years old, and many are 100 ft. high, with a girth of 10 feet or 12 feet. The stems are very straight and handsome, and free from the usual coarse knots, but they give coarse-grained wood. Some of these trees have been cut down in the winter, and although the timber has been well seasoned, sawn into planks, well creosoted, and stacked to prevent twisting, it invariably begins to decay in three years, whilst the wood of Pinus sylvestris (Scots Fir) of about the same age, and prepared in a similar way, is very durable and suitable for many purposes as rough timber. The common Larch comes to maturity as early, and is probably more useful than either of the other trees, and in a much younger state. All trees are better when they are propagated from self-sown seeds, and allowed to grow into timber without transplanting, as is the case with the Scots Firs growing in Surrey and around Aldershot and Brookwood. The best Canadian and American Pines are those which are self-sown, growing in some places on perpendicular rocks without any soil. The quality of the timber is good, being fine-grained and free from coarse knots. The trees are from 150 feet to 200 feet high. I have seen the beautiful Douglas Fir and the Canadian Pine growing in the valley of the famous Fraser River, fully 200 feet high, and without branches. The best Pine timber is becoming scarce in that part, as the many hundreds of miles of forests have been exploited for the finest trees where transit is easiest. *J. H. Goodacre, Elvaston Castle Gardens.*

Ripened Wood.—I differ from Mr. Moring (see p. 91) on all the points he mentions. Nevertheless, I trust others will relate their experiences on this interesting subject. Mr. Moring emphasises very strongly the importance of summer pruning young trees to obtain shapely specimens, but I fail to see what benefit he derives if the necessary thinning is done the previous winter. He contends it induces fruit spurs to form; I maintain it does nothing of the kind, but results in development of superfluous shoots that are of no value, and have to be removed after the fall of the leaf. When young trees fail to fruit successfully, no amount of pruning will induce them to do so; indeed, pruning only makes matters worse. Lifting the tree is the only remedy, and if that fails no other treatment is successful. Experience teaches me that the more trees are pruned the more shoots there are to cut away subsequently Furthermore, if a tree crops satisfactorily, there are practically no shoots to cut away. We have trees in these gardens that crop so well every year that no pruning is necessary. One correspondent states that it is the variety, and not the pruning, that fills the fruit room. By that I understand he is able to get good crops of only certain varieties. I maintain that good crops of Peaches can be grown, and are grown, without ripened wood, which I

assure Mr. Moring has no part whatever in the failure of the Peach tree he mentioned. Various reasons can be advanced as the probable cause of its failure to fruit, such as dryness at the roots, a very rich soil—resulting in rank growth—or an uncongenial soil. Lifting would be sufficient to bring about a desirable condition. *L. S. Small, Malshanger Gardens, Basingstoke.*

SOCIETIES.

ROYAL HORTICULTURAL.

February 18.—The chief floral features of the fortnightly meeting and exhibition of the above Society on Tuesday last were the Rhododendrons from the most favoured western county, Primulas from Reading, the Feltham Azaleas, and the forced shrubs. Stove and greenhouse Ferns were shown in quantity by two leading growers, and the several collections of Narcissus were also meritorious. There was an unusually large number of collections of paintings of flowers and garden scenes, and several of them were of more than average merit.

The Orchid Committee awarded eight Medals, five First-class Certificates, and one Award of Merit.

The Floral Committee awarded 22 Medals, one Award of Merit, and a Card of Cultural Commendation.

The Fruit and Vegetable Committee awarded two Medals to collections of vegetables and one for Lavender water.

At the 3 p.m. meeting of Fellows, Miss Mason delivered a lecture on "The Flowers of South-east and Central Africa."

Floral Committee.

Present: Henry B. May, Esq. (in the Chair); Messrs. Chas. T. Druery, G. Reuthe, R. C. R. Nevill, E. A. Bowles, Chas. E. Shea, Wm. J. James, Chas. E. Pearson, W. Cuthbertson, Charles Dixon, W. Bain, Wm. Howe, Thomas Stevenson, J. W. Moorman, J. F. McLeod, C. R. Fielder, Walter T. Ware, John Jennings, J. W. Barr, E. H. Jenkins, W. P. Thomson, Arthur Turner, George Paul, W. A. Bilney, John Green, R. C. Notcutt, Bernard Crisp, Jas. Hudson, R. W. Wallace, and George Gordon.

Messrs. J. Veitch & Sons, King's Road, Chelsea, London, displayed a very large group of Azalea indica varieties. The clean-stemmed standard specimens were unusually good, and relieved the mass of exceedingly floriferous dwarf plants. The varieties shown included the bright-red Apollo, J. T. D. Llewelyn, and Professor Walters (pink), and Niobe (white). In another place Messrs. Veitch arranged collections of Cyclamens and Cinerarias (Matador, Feltham Beauty and Pompadour), which showed excellent cultivation. (Silver-gilt Flora Medal.)

Mr. H. Burnett, St. Margaret's, Guernsey, arranged a collection of exceedingly fresh and bright Carnation blooms, arranged in a very tasteful manner. (Silver-gilt Banksian Medal.)

Messrs. Sutton & Sons, Reading, exhibited, just inside the entrance, an excellent collection of Primula sinensis attractively interspersed with Palms (Cocos Weddeliana) and Maidenhair Ferns. The Primulas included the "Star Primula" with flowers of pink and blue shades; "The Duchess," a variety which bears large red-eyed flowers, and such colour varieties as Giant Blue, Coral Pink, Crimson King and Brilliant Rose, all of which were admirable. (Silver-gilt Banksian Medal.)

Messrs. H. B. May & Sons, Upper Edmonton, showed a variety of their well-known Ferns. The "Golden Ferns" (Gymnogramma chrysophylla and varieties) were especially fine. Amongst the lesser-known Ferns we noted Polypodium vaccinifolium, Cheilanthes elegans, Adiantum reniforme asarifolium and Hymenodium crinitum. (Silver-gilt Banksian Medal.)

Messrs. J. Hill & Sons, Barrowfield Nurseries, Lower Edmonton, displayed many stove and greenhouse Ferns, and included very good plants of Osmunda javanica, Gymnogramma schizophylla gloriosa, Polypodium irioides ramo-cristatum, P. corymbifera ramosum, Davallia repens, D. canariense, and D. tenuifolia Veitchii (Silver-gilt Banksian Medal.)

Messrs. Wm. Cutbush & Son, Highgate, London, provided a fine collection of forced shrubs and Carnations. The shrubs included well-flowered examples of Azalea yodogama, Staphylea colchica, Rhododendron "Pink Pearl," Magnolia conspicua, M. Soulangeana, and the comparatively little-known Ledum latifolium compactum. Along the front of this group many Irises (I. reticulata, I. histrioides, &c.), Tulipa Kaufmannii, Eranthis cilicica, and various garden Tulips bore many flowers. (Silver Flora Medal.)

The Rev. H. Buckston, Sutton Hall, Sutton-on-the-Hill, Derby (gr. Mr. A. Shambrook), exhibited a large batch of Cyclamen "Mrs. Buckston," which attracted a deal of deserved admiration. This strain is exceedingly floriferous, and the large frilled flowers were of various shades of pink. (Silver Banksian Medal.)

Messrs. Stuart Low & Co., Bush Hill Park, Enfield, Middlesex, showed a variety of fresh Carnation blooms, many Cyclamens in pots, Oranges bearing small ripe fruits, and Erica melanthera. (Silver Banksian Medal.)

Messrs. Wm. Paul & Son, Ltd., Waltham Cross, again showed Camellias in bloom and a dozen plants of the beautiful double white Peach, as well as the double crimson variety, and a double-flowered Almond. (Silver Banksian Medal.)

Mr. L. R. Russell, Richmond, Surrey, displayed forced shrubs, chiefly tall Lilacs, of which the white-flowered kinds were especially good. Along the front of the group a Clianthus puniceus bearing quaint-shaped, bright-red flowers and plants of Azalea mollis and A. indica varieties provided bright colour. (Silver Banksian Medal.)

Messrs. Allwood Bros., Wivelsfield Nurseries, Haywards Heath, Sussex, exhibited exceedingly good Carnation blooms, those of Wivelsfield White and the deliciously-scented Mary Allwood being especially fine. (Bronze Flora Medal.)

Messrs. Young & Co., Hatherley, Cheltenham, showed Carnations of such varieties as Carola, Hon. Lady Neeld, Hon. John Boscawen, Scarlet Glow and Winsor.

The London Flower Co., 22a, North Audley Street, London, staged Cineraria stellata "Bleu d'Azur" of rich colour.

Messrs. W. Wells & Co., Merstham, Surrey, included such varieties as White House, St. Nicholas and Northport, in an exhibit of Carnations.

Mr. C. Engelmann, Saffron Walden, Essex, showed many vases of bright, fresh Carnations. The varieties Lucy, Mrs. C. W. Ward, Rosette and White Wonder being the most prominent.

Mr. James Box, Lindfield, Sussex, also showed forced shrubs and Alpines.

Mr. George Mount, Canterbury, staged a score of vases of "Richmond" Roses which were fresh and fragrant.

Messrs. C. Brooks & Son, Worting, Basingstoke, laid out a large number of good Primula blooms, in colour blocks on black velvet.

Messrs. H. Cannell & Sons, Swanley, showed many spikes of bright trusses of zonal Pelargoniums.

Messrs. Barr & Sons, Covent Garden, built a neat rockery and furnished it with such plants as Saxifraga Elizabethæ, Cyclamen ibericum, Scilla and Chionodoxa. In another part of the hall, Messrs. Barr showed a good collection of Narcissi, Hyacinths, Tulips and Crocuses. The Narcissi included very fresh blooms of the varieties Primrose Queen, Blazing Star, Firelight, Eggs and Bacon, Plenipo and Golden Rose. (Silver Flora Medal.)

Mr. F. Herbert Chapman, Rotherside Gardens, Rye, showed many Daffodils, chiefly of Triandrus hybrids, in pots. The pure-white varieties, which included Spendrift, Alabaster, Madonna, &c., were especially prominent, and in the centre of the exhibit there was a large pan of the dainty N. calathinus, whilst at one end were to be seen N. Triandrus albus × cyclamineus, and several plants of N. minicycla. (Silver Flora Medal.)

Messrs. Carter & Co., Raynes Park, made a large mound on the floor against the back wall of the hall, and planted it with specimen Conifers and large breadths of Narcissus poetaz varieties, such as Aspasia, Alsace, Ideal, &c., making a very pleasing effect. (Silver Banksian Medal.)

Messrs. Cartwright & Goodwin, Ltd., Kidderminster, showed Narcissus, Hyacinths, Crocuses, and other spring bulbous flowers. The Crocuses, which were growing in bowls of fibre, bore exceedingly large flowers of good colour. Amongst the Daffodils, the best were Henry Irving, Sir Watkin, Commodore, Cornelia, Southern Star and Firebrand. (Silver Banksian Medal.)

Messrs. R. H. Bath, Ltd., Wisbech, displayed Narcissus, Tulips, and Crocuses growing in bowls of fibre.

Messrs. Pipers, Bishop's Road, Bayswater, London, filled a corner of the hall with a very natural-looking rockery, in which Iris pumila, Primula denticulata alba, Saxifraga oppositifolia, &c., were very effectively massed. In the background compact little examples of Retinospora tetragona aurea, Thuya Elvangeriana "Rheingold," and other Conifers aided in suggesting a tree-clad hill with Alpines growing on its slopes. (Bronze Banksian Medal.)

Messrs. Whitelegg & Page, Chislehurst, Kent, also arranged a very attractive rockery and displayed Iris reticulata, Scillas in variety, and various Narcissi. (Silver Banksian Medal.)

The Wargrave Hardy Plant Farm, Ltd., The Arcade, Liverpool Street, London, built a low rockery and furnished it with Myosotis "Ruth Fischer," Soldanella alpina, various Saxifrages, &c.

The Burton Hardy Plant Nursery Co., Christchurch, Hants., built a sloping rockery and displayed various spring flowers. The "Evelyn Arkwright" variety of the common Primrose is very desirable, and a well-coloured little bush of Retinospora filifera aurea also attracted attention.

Messrs. Bees, Ltd., Liverpool, displayed Rhododendron præcox, Erica mediterranea, Primula denticulata and various Saxifrages.

Messrs. W. T. Ware, Ltd., Feltham, Middlesex, built a low rockery and embellished it with several forms of Primula denticulata, Leptospermum "Heavenly Blue," Bletia hyacinthina, &c. (Bronze Flora Medal.)

Small rock-gardens were exhibited by Mr. Clarence Elliott, Lever Hills Nursery, Stevenage (Silver Banksian Medal); Messrs. John Peed & Son, West Norwood, London; The Guildford Hardy Plant Co., Guildford, Surrey; Messrs. R. Tucker & Sons, 16, George Street, Oxford; Messrs. G. & A. Clark, Dover; Messrs. Thompson & Charman, Adam Street, Adelphi, London; Mr. George Miller, Clarkson Nurseries, Wisbech; the Misses Hopkins, The Mere Gardens, Shepperton-on-Thames; Messrs. R. Wallace & Co., Kilnfield Gardens, Colchester, and Mr. Maurice Prichard, Christchurch, Hants. (Bronze Banksian Medal).

Mr. R. Gill, Tremough, Falmouth, illustrated with splendid trusses of Rhododendron blooms the mildness of the climate of South Cornwall and his great skill as a hybridist and raiser of these beautiful shrubs. The rich red trusses of R. cornubia contrasted well with the pink and white blooms of the R. arboreum varieties. A single-stemmed plant of R. Falconeri bore immense luxuriant leaves. (Silver Banksian Medal.)

Mr. G. Reuthe, Keston, Kent, included in his exhibit many rare conifers; Athrotatis laxifolia, Dacrydium cupressinum and Pinus sylvestris var. Beuvronensis. The various Rhododendrons and Camellias made a very bright show and set off the Irises, Crocuses and Heathers, which were shown in great variety. (Bronze Flora Medal.)

Messrs. Barrie & Brown, 39, King William Street, London Bridge, London, showed samples of lawn grass.

Miss Ivy Massee, Gatecacre, Kew Gardens, exhibited a clever series of paintings of various trees, plants and flowers such as Parrotia persica, Meconopsis aculeata, Orchids, Pitcher plants and various tropical Gourds. The botanical characteristics of the plants were depicted and rendered the series especially interesting.

Miss MASON exhibited a great number of her paintings of landscapes of the Transki and the flowers of South-east and Central Africa, which were dealt with in her lecture.

Miss OUGH, 2 Westwell Road, Streatham Common, showed garden scenes of Kew, Hampton Court, Brockwell Park, &c.

Miss ELLEN WARRINGTON, 48, Buckleigh Road, Streatham Common; Miss ADIE, 9, Brechin Square, London; Mrs. FISHER, Westerham, East Molesey; Mrs. MACALISTER, 26, Thurloe Square, London; Miss C. DI GUARDI, 18, Montagu Road, Richmond Hill, Surrey; Miss JOSEPHINE GUNDRY, Foot's Cray, Kent, and Mr. ROBERT HUGHES, Potter's Bar, also contributed paintings of gardens and flowers.

There were also on show samples of Wakeley's Hop manure, folding span-lights, Coldrum's pottery and Jeyes' horticultural washes and sprays.

AWARDS.

AWARD OF MERIT.

Crocus "Kathleen Parlow."—A large-flowered, pure-white bedding Crocus of Dutch origin. The segments of the perianth are from 2 inches to 2½ inches in length, over 1 inch in breadth, and of great substance. The fringed, funnel-shaped stigmas are bright orange and very showy. The variety has been in commerce for the last few years, and, being the best of the whites, should become very popular. (Shown by Messrs. CARTWRIGHT & GOODWIN.)

CARD OF CULTURAL COMMENDATION.

Magnolia Campbellii.—A few blooms of this loveliest of Magnolias were sent from Abbotsbury Castle, with a note that one tree was carrying over 80 blooms this year, and had been quite uninjured by frost. The species was given a First-class Certificate on March 10, 1903, when blooms were sent by the late Mr. Gumbleton and Messrs. R. Veitch & Sons, but most cultivators have been unable to flower it freely. (Shown by MARY Countess of ILCHESTER—gr. Mr. Kempshall.)

Orchid Committee.

Present: J. Gurney Fowler, Esq. (in the Chair); Messrs. Jas. O'Brien (hon. sec.), Gurney Wilson, J. S. Moss, R. A. Rolfe, Stuart Low, F. M. Ogilvie, F. J. Hanbury, T. Armstrong, C. H. Curtis, W. Cobb, J. Charlesworth, J. Cypher, W. H. Hatcher, J. E. Shill, W. P. Bound, H. G. Alexander, A. Dye, W. H. White, de B. Crawshay, J. Wilson Potter, Sidney Flory, W. Bolton, R. Brooman White, C. J. Lucas, and Sir Harry J. Veitch.

A very varied and interesting show of Orchids contained some specially good exhibits by amateurs, among them a small selection of hybrids sent by Lieut.-Col. Sir GEO. L. HOLFORD, K.C.V.O., Westonbirt (gr. Mr. H. G. Alexander), which included Lælio-Cattleya Valeria (L.-C. luminosa × L.-C. Dora), a novelty of a distinct buff-yellow tint veined with rose; Cattleya Trianæ Castor, of fine shape and colour; Cymbidium Alexanderi and C. Gottianum; and the new Cattleya Leda. (See Awards.)

Baron BRUNO SCHRÖDER, The Dell, Englefield Green (gr. Mr. J. E. Shill), showed two fine white Cattleyas, C. Trianæ The Baron, which secured a First-class Certificate, and the very remarkable Odontoglossum crispum "The Dell Sunrise," a fine, wax-like, white flower, with a slight ruby-red margin to the petals, and an occasional claret-coloured spot.

SAMUEL GRATRIX, Esq., West Point, Whalley Range, Manchester (gr. Mr. Brown), sent in fine order the handsome Odontoglossum crispum Leonard Perfect, which had previously been awarded a First-class Certificate and Medal. The finely-grown plant, which is all the more noteworthy for its having been grown within three miles of the Manchester Corn Exchange, had a stout spike of 14 fine flowers, closely arranged, and the blotches more distinctly coloured than usual. The broad-fringed white petals had each a large, irregular blotch of purple-red, the sepals several smaller and rather lighter blotches, and the fringed lip a yellow crest with a chestnut-brown blotch in front.

H. S. GOODSON, Esq., Fairlawn, Putney (gr. Mr. G. E. Day), was awarded a Silver Flora Medal for an effective group, the centre of which was of hybrid Phaius. On each side were hybrid Odontoglossums and Odontiodas, the best of which were Odontoglossum Amethyst (of fine colour), O. Wiganianum, O. Lambeauanum Harry Goodson (a very distinct pale-yellow flower, profusely decorated with small, purple spots), varieties of O. eximium and O. ardentissimum. Among hybrid Lælio-Cattleyas and Brasso-Cattleyas was the very handsome Brasso-Cattleya amabilis "Goodson's variety." (See Awards.)

F. M. OGILVIE, Esq., The Shrubbery, Oxford (gr. Mr. Balmforth), showed the handsome Odontioda Mrs. F. M. Ogilvie, with a fine spike of large and richly-coloured flowers. This variety was one of the attractions of the International Show, where it secured a First-class Certificate. Odontoglossum crispum Lady Jane was also shown in splendid condition.

Messrs. CHARLESWORTH & Co., Haywards Heath, were awarded a Silver Flora Medal for an interesting group, principally hybrids, and among which were noted the pretty yellow Brasso-Lælio-Cattleya Joan, Odontoglossum ardentissimum, and the white variety xanthotes, with a very fine branched spike, O. Phœbe magnificum, varieties of O. eximium, showy Lælio-Cattleyas, &c. Among species was a grand form of the best old type of Miltonia Roezlii, good white Lælia anceps Schröderiana, and Angræcum citratum.

Messrs. SANDER & SONS, St. Albans, obtained a Silver Flora Medal for a fine group, in which were over 50 forms of the best type of Cattleya Trianæ, the flowers being all of good shape, a few being white, and the greater part having richly-coloured labellums. Several plants of Lælio-Cattleya Trimyra showed great variation in colour, one being bright yellow, with ruby lip, another all blush-white. Good Odontoglossum Pescatorei, O. nevadense, Eria amica, Ada aurantiaca, with eight spikes, and some fine Lycaste Skinneri were also noted.

Messrs. J. CYPHER & SONS, Cheltenham, were awarded a Silver Banksian Medal for a well-arranged group, the centre of which was of Calanthe Bryan, with Phalænopsis Schilleriana and some good forms of Cattleya Trianæ. With them were a selection of hybrid Cypripediums, Zygopetalum crinitum, Angræcum citratum, &c.

Messrs. J. & A. MCBEAN, Cooksbridge, staged a neat group, which secured a Silver Banksian Medal. Specially good were Cymbidium insigne, C. Schlegelii, C. Gottianum, C. eburneo-Lowianum concolor, C. eburneum, white Lælia anceps Schröderiana, varieties of Cattleya Trianæ, and hybrid Odontoglossums.

Mr. W. A. MANDA, St. Albans, was awarded a Silver Banksian Medal for a group of many forms of Cattleya Trianæ, varying in colour, some of the forms having very good purplish-crimson labellums.

Messrs. STUART LOW & Co., Bush Hill Park, received a Silver Banksian Medal for a group in which were some fine Dendrobium Wardianum, including a strong specimen of the clear-white variety, with 45 flowers. Among Cattleyas were two remarkable forms of C. Percivaliana, the one named violacea being pale lilac, with violet marking on the lip and the variety Little Gem white, with a pink tint in front of the yellow disc. C. Trianæ Amesiana, C. T. "Bank House variety," C. T. Monarch, C. T. Thetis, and some dark-coloured Lælio-Cattleyas were specially good.

The LIVERPOOL HORTICULTURAL COMPANY (John Cowan), Gateacre, secured a Silver Banksian Medal for a group of hybrids of Lælia Cowanii crossed with Cattleya Trianæ, C. Harrisoniana, and others. The flowers varied considerably, but were generally of a bright yellow colour, with ruby-red front to the lip. Some forms, however, were white and rose coloured.

Monsieur M. MERTENS, Ghent, showed various hybrid Odontoglossums, &c.

H. T. PITT, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), sent Cypripedium Ophir (exul × Calypso), with flowers nearest to C. exul; and Odontoglossum eximium Perdita, very prettily marked.

E. DE Q. QUINCEY, Esq., Oakwood, Chislehurst (gr. Mr. G. B. Lees), sent a hybrid Dendrobium, Cattleya Trianæ The Admiral, and a pretty Cypripedium between concolor and Godefroyæ.

F. J. O. MONTAGU, Esq., Lynford Hall, Mundford, Norfolk, sent Cypripedium Mrs. Montagu (aureum Surprise × Leeanum Clinkaberryanum), nearest to C. aureum Surprise, but larger and darker in colour.

Miss BAKER BAKER, Elmore Hall, Durham, sent Bletia hyacinthina Gebina, the whitish form. It was said to have been received from Darjeeling.

AWARDS.

FIRST-CLASS CERTIFICATES.

Cattleya Trianæ The Baron, from Baron BRUNO SCHRÖDER, The Dell, Englefield Green (gr. Mr. J. E. Shill).—A splendid, pure-white flower, with a pink tint in front of the yellow disc of the lip. The broad petals and lip are well displayed.

Cymbidium Alexanderi "Fowler's variety" (insigne × eburneo-Lowianum), from J. GURNEY FOWLER, Esq., Glebelands, South Woodford (gr. Mr. J. Davis).—One of the finest of Cymbidiums, the flowers being very large. The broad sepals and petals are blush-pink, bearing dotted rose lines, the fine, crimped lip cream-white, with effective dark-red marking.

Odontoglossum Amethyst "Glebelands variety" (Lambeauanum × eximium), from J. GURNEY FOWLER, Esq.—A good flower, of deep, reddish-claret colour, with white markings on the outer halves of the segments, and white front to the lip.

Brasso-Cattleya Menda (B.-C. Digbyano-Mossiæ var. Queen Alexandra × C. labiata Virginia), from PANTIA RALLI, Esq., Ashtead Park.—A very beautiful and large blush-white flower, with a crimson line on the finely-fringed lip in front of the yellow disc.

Brasso-Cattleya amabilis "Goodson's variety" (B.-C. Mrs. J. Leemann × C. Mossiæ), from H. S. GOODSON, Esq., Fairlawn, Putney (gr. Mr. G. E. Day).—A grand flower, perfect in shape and of a deep, rosy-mauve colour, the fringed lip having a yellow disc.

AWARD OF MERIT.

Cattleya Leda (Percivaliana × Dowiana aurea), from Lieut.-Col. Sir GEO. L. HOLFORD, K.C.V.O. (gr. Mr. H. G. Alexander).—A pretty flower, equal in size to a good C. Fabia, deep rose, with gold veining in the lip.

Fruit and Vegetable Committee.

Present: George Bunyard, Esq. (in the Chair); Messrs. Jos. Cheal, W. Bates, Edwin Beckett, J. Davis, A. R. Allan, J. G. Weston, W. E. Humphreys, A. Bullock, P. D. Tuckett, H. H. Williams, and C. G. A. Nix.

Mrs. E. H. DENNISON, Little Gaddesden, Berkhamsted (gr. Mr. A. G. Gentle), showed an excellent collection of root vegetables. The Carrots (Long Surrey, Carter's Scarlet Perfection, and Carter's Red Elephant), Parsnips (Carter's Maltese and Holborn Marrow), and Beet (Carter's Red, Crimson Ball and Carter's Perfection) were equal to the highest exhibition standard. The many varieties of Potato were excellent, and included Carter's Long Keeper, Duchess of Cornwall and Goldfinder. Onions, Turnips and Shallots were also equally well shown. (Silver Knightian Medal.)

Messrs. SUTTON & SONS, Reading, displayed many excellent heads of Broccoli of the varieties Sutton's Snow White and Sutton's Superb Early White, which illustrated the desirable "protecting" nature of the long, incurving leaves and the whiteness of the hearts. (Silver Banksian Medal.)

Sir WALTER GILBEY exhibited from Elsenham, Stansted, many pots of fruit-jam and Lavender water. For the latter a Silver Banksian Medal was awarded.

Fruit preserves were also shown by Mrs. MILLER, Marlow, and Miss HILDA SEWELL, South Kensington.

ROYAL SCOTTISH ARBORICULTURAL.

FEBRUARY 7.—The annual business meeting of this society was held in Edinburgh; Sir John Stirling Maxwell, the president, was in the chair, and there was an attendance of 60 members.

The report by the council stated that although considerable progress had been made in the course of the year, in some respects the results had been disappointing. A further concession as regards death duties on woodlands had been made by the Budget of last year, and now on the death of an owner the value of the timber is added to his other estate for the purpose of ascertaining the rate of duty, but the duty is charged on the timber when cut at the same rate as is charged on his other estate. It was also stated

that in order to convince the people of the Western Highlands, among whom considerable opposition to and prejudice against forestry existed, the council had appointed a committee to consider the subject with a view to convincing them that, instead of being antagonistic to their interests, forestry would prove a great boon to them. As regarded the Department of Forestry which Lord Pentland had promised as an integral part of the administration of the new Board of Agriculture for Scotland, Mr. McKinnon Wood had been reminded of his predecessor's promise, and, as a result of representations to the Board, they had since advertised for an estate suitable for a State Demonstration Forest, but so far as was known no estate had yet been acquired, and nothing further had been made public regarding the progress of the scheme.

In moving the adoption of the report, the chairman said that though, during the last three years they had made less progress than he hoped, nevertheless they had made a good deal. Each year they had passed through a different phase, and he observed that with each new phase the progress became slower. First, the society had to choose a line for the development of sylviculture. It fell to him to embody their ideas in a memorandum, and he desired to record the fact that their policy had not only been arrived at unanimously, but it had never varied. Since there was no one else to do it, they made an attempt themselves to tackle some of the difficulties of afforestation, and then a long and wearisome correspondence led to the appointment of a committee by the Secretary for Scotland to consider the policy they had laid before him. Then came the appointment of the Board of Agriculture, including a Department of Forestry, followed by the appointment of an advisory committee, and at this point his narrative ceased. He left it to Mr. Sutherland, whom they welcomed as the head of the Department for Forestry for Scotland, to take up the tale.

Mr. Sutherland stated that since the Board of Agriculture came into existence 10 months ago many matters other than forestry had demanded immediate attention, but in connection with forestry it had been decided to make a representation to the Development Commissioners of the urgent necessity for advisory and research officers for Scotland. The Board also felt that progress might be made in the direction of a general survey of Scotland, showing the areas in which sylviculture was practicable, and a start in this direction had been made. Quite recently, too, the Board had been able to arrange for the testing of forest tree seeds for germination, and samples sent to the Secretary of the Board would be tested free of charge.

The financial statement showed that the funds of the society at December 31 last stood at £1,809 8s. 2d., and that there was a balance of income over expenditure for the year of £136 18s. 10d.

Captain Stirling, of Keir, was elected president for 1913, and Sir Andrew Agnew and Mr. Steuart Fothringham, of Murthly, were elected to the vacant vice-presidencies. Dr. Borthwick was elected honorary editor of the *Transactions*, in succession to the late Colonel Bailey.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

February 6.—*Committee present:* Z. A. Ward, Esq. (in the Chair); Messrs. R. Ashworth, J. Bamber, J. Cypher, J. Evans, A. Hanmer, Dr. Hartley, A. J. Keeling, J. Lupton, W. J. Morgan, C. Parker, F. K. Sander, H. Thorp, A. Warburton, and H. Arthur (secretary).

A *Gold Medal* was awarded to O. O. Wrigley, Esq., Bury (gr. Mr. Rogers), who staged a magnificent group, composed principally of Lycastes and Cypripediums.

Silver-gilt Medals to Z. A. Ward, Esq., Northenden (gr. Mr. Weatherby), who showed a fine group of Odontoglossums in variety; and R. Ashworth, Esq., Newchurch (gr. Mr. Gilden), for a nice group of Odontoglossums.

Large Silver Medal to A. Warburton, Esq., Haslingden (gr. Mr. Dalgleish), for a group of Odontoglossums in variety.

Silver Medals to Col. J. Rutherford, M.P., Blackburn (gr. Mr. Lupton), who staged a group of Cypripediums; S. Gratrix, Esq., Whalley Range (gr. Mr. Brown), for a small group of choice varieties; Messrs. J. Cypher & Sons, Cheltenham, for a mixed group.

Bronze Medal to Rev. J. Crombleholme, Clayton-le-Moors (gr. Mr. Marshall), for a small group of Cypripediums.

Other exhibitors included H. J. Bromilow, Esq., Rainhill (gr. Mr. Morgan); H. Arthur, Esq., Blackburn; Messrs. Sander & Sons, St. Albans; Messrs. Charlesworth & Co., Haywards Heath; Mr. J. Evans, Congleton; Messrs. A. J. Keeling & Sons, Bradford; and Mr. W. Shackleton, Bradford.

AWARDS.

First-class Certificates.

Cypripedium King Ferdinand (Hera Euryades × Mrs. Mostyn), a fine, well-shaped flower and very bright, from S. Gratrix, Esq.

Odontoglossum ceres var. "Rossendale" (Rossi × Rolfæ), large flowers, good colour, and well spotted, from R. Ashworth, Esq.

Awards of Merit.

Odontoglossum × *Harlequin* and *O. eximium var. "Ellis Markindale,"* from S. Gratrix, Esq.

Cypripedium Wellesleyæ (insigne × niveum), from Rev. J. Crombleholme.

Odontoglossum Northern Star, from Z. A. Ward, Esq.

Odontioda Diana var. "Fire King," from R. Ashworth, Esq.

Cymbidium Wiganianum (Traceyanum × eburneum), from H. Arthur, Esq.

DEBATING SOCIETIES.

RUDDINGTON GARDENERS'.—At the meeting held on the 20th ult. Mr. Hudson, of Leicester, lectured on "Onions for Exhibition and Profit." He said that the variety Ailsa Craig intended for exhibition should be sown on January 15 in heat. The seedlings should be pricked out early in March, and planted finally at the end of April, when the plants should be as thick as a lead pencil. The bed should be double dug and rich stable manure mixed with the soil. The Onions should be set at 18 inches apart. In June the soil should be hoed twice each week. The plants must be watered in July if the weather is dry. For an ordinary crop the seeds should be sown thinly in drills made 2 inches wide and 15 inches apart in deeply dug soil, to which manure and a little salt has been added. The ground should be hoed frequently. Artificial manures should be afforded with discretion, as an excess might cause the bulbs to split.

CHESTER PAXTON.—The first of the lectures for the new session was given on the 3rd inst. at the Grosvenor Museum, when Professor Robt. Newstead delivered an address on "Nyassaland, British Central Africa." After explaining the various geographical features of the country, Mr. Newstead gave an account of some of the domestic experiences which he went through during his journey, and illustrated his remarks by lantern slides. Dwelling more particularly on the floral features, Professor Newstead explained very clearly, by means of splendid slides, the three large divisions of plants encountered in the neighbourhood of his camp on the banks of the Zambesi River. First the edge of the river was covered very thickly with a perfect network of aquatic plants. In this swampy ground countless millions of mosquitos and other deadly malaria-carrying insects were found. The forests and the trees composing them were explained and illustrated, including the two trees in which Professor Newstead found the pupæ of the Tsetse fly, which were the first ever discovered. The pupæ of the insect which produced sleeping sickness were also discovered by the lecturer.

READING GARDENERS'.—The annual meeting of this association was held on the 13th inst. Mr. F. B. Parfitt, the President, occupied the chair. The annual report showed that the membership at the close of the year reached a total of 291. The usual meetings had been held, and at the April flower show a collection was made amounting to £2 10s. on behalf of the Royal Berks Hospital. The report also alluded to the various excursions that had taken place during the year. Mr. Macdonald read the treasurer's report, which stated that the total receipts, including the balance brought forward, were £97 15s. 8d., and the expenditure £38 1s. 11d., leaving a balauce in hand of £59 13s. 9d. The report and balance sheet were adopted. Mr. Parfitt was re-elected president.

———The first meeting of the new session took place on the 27th ult., when there was almost a record attendance. The president occupied the chair. Mr. Thomas Stevenson, The Gardens, Woburn Place, Addlestone, gave a lecture on "The Cultivation of Sweet Peas." Mr. Stevenson gave exhaustive advice as to the preparation of the ground and cultural details, both with regard to autumn and spring sowing. He advocated autumn sowing, but if it were not possible to sow the seeds before the middle of October the better plan to adopt would be to defer the operation until the first week in February. Peas would be found to come into flower more quickly on light soil, but they bloom for a longer period on heavy land. Mr. Stevenson gave at length his opinion on "streak" disease, with advice as to combating it, though he said he was unable to give a remedy.

CARDIFF GARDENERS'.—At the meeting of the above association, held on the 21st ult., Mr. A. H. Cossom presided over a good attendance of members. Mr. Wills, a representative of the Newport Association, delivered a paper on "Would They Have Been Pests if Left Alone?" or, "Do we Treat our Pests Aright?" Mr. Wills contended that nowadays gardeners were in the habit of killing everything in the garden that attacked flowers, fruit or vegetables, thereby often doing more harm than good. He gave as an instance the bud-eating birds, many of which were also insect-eating nine months out of twelve. By destroying these birds, he said, trees were often infested with insects on which the birds fed.

———The fortnightly meeting of the above association was held at the Queen's Hotel on the 4th inst., when Mr. A. H. Cossom presided over a good attendance of the members. Mr. Matthews, of Llanishen, read a paper on "Begonias from Seed to Show Tables." Mr. Matthews recommended sowing the seed in 6 inch pots during January in a temperature of from 75° to 80°. The seed should be sown on the top of the soil. The seed pots should be placed in a 9-inch pot, filling the space between the two pots with sand, which should be kept moist. The seedlings will appear in about 10 days, and as soon as the first rough leaves are formed they should be dibbled in boxes. The soil employed for potting should be as rough as possible, and consist of three parts turfy loam and one part peat (with plenty of grit to keep it porous), and well pulverised cow manure rubbed through a ½ inch sieve.

CROYDON & DISTRICT MUTUAL IMPROVEMENT.—The thirteenth annual report of this society shows that good progress has been made during the past year. The spring show was a success, and throughout the summer out-door meetings were a source of much pleasure. Much of the work of the society is of an educational nature, and it possesses a microscope for the use of the members. Prizes are given for essays, and expert advice on fungus diseases can be obtained from members of the committee.

———There was a good attendance of the members at the meeting held on Tuesday, 21st ult., when a lecture, entitled "Then and Now," was given by Mr. J. Gregory. Mr. Gregory, from a very wide experience in horticultural matters, was able to contrast the methods of culture in use over 60 years ago with the practice of the present day. One of the principal successes gained by the lecturer was a prize for Melons at the International Flower Show in 1866. And he is proud of the fact that he could compare the great International Show of 1912 with that of 1866. Mr. Gregory illustrated his remarks by lantern slides.

BRISTOL AND DISTRICT GARDENERS'.—The fortnightly meeting of this association was held on the 30th ult. Mr. Thoday presided over a good attendance of the members. A lecture was delivered by Mr. Strugnall, Trowbridge, on "Apple and Peach Culture." Mr. Strugnall stated that the chief details to observe in Peach culture were the protection of the blossoms from frosts and cold winds, disbudding and the training of the shoots. The border should be made with good loam mixed with burnt earth and lime rubble.

DUMFRIES AND GALLOWAY GARDENERS'.—Mr. S. Arnott presided over an excellent attendance at the second meeting of this association held in St. George's Hall, Dumfries, on the 25th ult. A paper on "Shows and Showing" was read by Mr. Croall, of Messrs. T. Kennedy & Co., Dumfries. The principal points connected with shows and showing were mentioned and dealt with in an instructive and useful manner.

———At the meeting of this association, held in St. Georges's Hall. Dumfries, on the 8th, there was a large attendance, presided over by Mr. S. Arnott. A paper on "Gardeners and Gardening" was read by Mr. Reid, gardener to R. Rogerson, Esq., Marchmount, Dumfries.

LOUGHBOROUGH AND DISTRICT GARDENERS'.—At the meeting of this association, held in the Town Hall on the 4th inst., Mr. J. H. Woolley gave a lecture on "Some Curiosities in Plant Life." By a series of hand-painted slides the lecturer showed how certain plants attracted flies and other insects for pollination.

SCHEDULE RECEIVED.

The Perpetual-Flowering Carnation Society's fourteenth show, to be held in the Winter Halls, Leamington Spa, Leamington, on Thursday and Friday, April 10 and 11. Secretary, Mr. T. A. Weston, Floradale, St. John's Road, Orpington.

Streatham and District Sweet Pea and Rose Society.—The fifth annual show of this society will be held in the Streatham Hall on Thursday, July 10. Secretary, Mr. David Gibb, 152, Sunnyhill Road, Streatham.

CATALOGUES RECEIVED.

Bees Ltd., Liverpool—Hardy and other Plants.
Dickson & Robinson, Manchester—Farm Seeds.

FOREIGN.

Vilmorin-Andrieux et Cie., Paris—General C. of Plants.
Ant. Roozen & Son, Overveen, Haarlem—Bulbs and Seeds.

GARDENING APPOINTMENTS.

[*Correspondents are requested to write the names of persons and places as legibly as possible. No charge is made for these announcements, but if a small contribution is sent, to be placed in our collecting Box for the Gardeners' Orphan Fund, it will be thankfully received, and an acknowledgment made in these columns.*]

Mr. H. Cotterill, late Gardener to E. H. Cartwright, Esq., Myskyns, Ticehurst, Sussex, and 8 years previously Gardener to John Alexander, Esq., Rowhill Grange, Dartford, Kent, as Gardener to E. J. Upton, Esq., Coptfold Hall, Ingatestone, Essex.

Mr. W. E. A. Higley, for the past 2 years Foreman at Huntroyde Park, Padiham, Lancashire, previously at Wynyard Park, Shavington Hall, and Pell Wall, as Gardener to H. Astley, Esq., Carr Laund, Nelson, Lancashire.

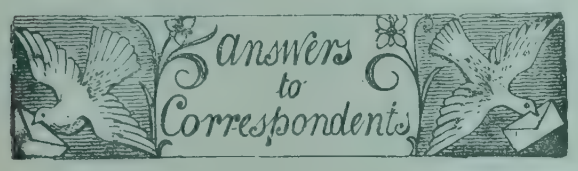
Mr. A. Trotter, for the past 9 years Head Gardener to J. Bolton, Esq., at Carbrook, Larbert, as Head Gardener to Lady Watson, Barnock, Hamilton.

Obituary.

JOHN T. TEMPLE.—The *Florists' Exchange* records the death of Mr. John T. Temple, a well-known American florist. He was born in New York, of British parents, in 1844. He travelled throughout the Rocky Mountains on a botanical expedition with Dr. C. C. Parry, and in 1862 commenced business at Davenport, Iowa.

ROBERT HAY NICOL.—This well-known Nottinghamshire gardener died on February 14, at the age of 48 years, at Clifton Hall Gardens, where he had been in charge for the past seven years. Before going to Clifton Hall, Mr. Nicol was for 11 years gardener to Mr. P. Mills, at Ruddington Hall, in the same county. Mr. Nicol was a very successful gardener and a frequent lecturer at the meetings of the Ruddington Gardeners' Mutual Improvement Association.

W. FORD.—We regret to announce the sudden death of Mr. W. Ford, the manager of Messrs. Watkins and Simpson's trial seed grounds at Feltham, Middlesex. He died on Monday night, but no particulars have as yet come to hand.



*** *The Editors will be glad to receive, for consideration, large photographs of horticultural subjects, suitable for reproduction in this Journal.*

APPLE CANKER: *N. D., Ireland.* The trees which are so very badly infested will not be worth treating, so they should be rooted up and burnt. With the other trees, the worst branches should be removed and the remaining canker cut out cleanly, and the wound at once dressed with gas-tar. The canker is a fungus which often appears in the wounds caused by the American blight, so the Apple trees should be kept quite clear of this pest. As soon as any of the "blight" is to be seen, it should be stabbed with a stiff brush which has been dipped in paraffin. Trees which are badly infested with the American blight may be sprayed in winter with the following dressing: 1 lb. caustic soda, ¾ lb. carbonate of potash, 10 ounces of soft soap, and 10 gallons of water, adding the soft soap last of all. This dressing must only be applied whilst the trees are quite at rest, and leather gloves should be worn so that the hands are not burnt by the caustic soda. As the Apple trees in your garden will now have commenced to grow, any branches affected with the American blight should be well scrubbed with a paraffin emulsion, which may be made by boiling ½ lb. of soft soap in a quart of water, and, whilst boiling, mix it with a wineglassful of paraffin. As certain varieties of Apple seem to be predisposed to canker in various localities, you should note the varieties which are cankered and not replant them. The following is a selection of dessert and cooking Apples in their order of ripening, which may be recommended for culture in your county. *Dessert*: Beauty of Bath, Devonshire Quarrenden, Irish Peach, King of Pippins, Blenheim Orange and Cox's Orange Pippin. *Cooking*: Lord Suffield, Warner's King, Loddington Seedling, Wellington Bramley's Seedling, and Lane's Prince Albert. Although we have placed Blenheim Orange with the half-a-dozen dessert varieties, it is also an excellent cooking Apple.

CALANTHE BULB DECAYED: *E. M.* The pseudo-bulb sent indicates that the damage has been caused from the root. Decay of this kind often arises from watering too freely after the growths are fully made up, especially if liquid manure is used. This cause and a too low temperature would account for the damage. Turn the affected bulbs out of their pots and store them on a shelf in a warm house until active growth commences, when each bulb should be potted into comparatively small pots and repotted into larger pots when necessary.

CONCENTRATED MANURE FOR TOP-DRESSING VINE BORDERS: *Doubtful.* Most concentrated manures of repute contain all the necessary ingredients; therefore there would be no advantage in alternating that of one maker with that of another. The sort you mention is one of the best, but you must be careful not to exceed the quantities recommended by the proprietors. Lime is an essential element, without which you cannot obtain the full benefits of any manure, however good in itself. It should be slaked, and used at the rate of a peck to the perch, at least three weeks before the application of the fertiliser.

GARDENIAS: *A. E. E. S.* There is no disease present in the examples sent. The injury is caused by some error in culture. The leaves appear to have been injured by the application of too strong an insecticide.

MEALY BUG ON VINES: *Doubtful.* It would be risky to cyanide your houses now that the vines have started. In the autumn after the fruit is gathered, and while the leaves are still green, you may commence the treatment by using cyanide of sodium at the rate of 2 ounces per 1,000 cubic feet, and after the leaves have fallen you can safely use 6 ounces per 1,000 feet. All tender plants must be removed before the stronger application is made, and all apertures securely stopped. You are, we hope, fully aware that very great caution is necessary in performing the operation. Meanwhile, you may vaporise regularly for some time at intervals of a week with the preparation you name, so long as you do not exceed the quantity recommended by the vendor. You should also clean all stages and other woodwork with strong soapsuds, and afterwards paint them with pure paraffin oil. The sash bars, rafters, &c., should also be painted with paraffin, taking care not to drop any on the vines. A careful daily look out should be kept for the enemy, and any insects that show signs of life should be touched with a small camel-hair brush dipped in methylated spirit. If the roots are too far advanced to allow of the surface soil being removed, it may be watered with soft soapy water at the rate of 8 ounces to the gallon, using 2 gallons to the square yard, and taking care that the bases of the stems get their full share. Used in moderation it will not injure the stems where there are no young growths. It is a difficult matter, but not an impossible one, to rid a vinery of mealy bug, but an almost daily search must be persisted in.

NAMES OF PLANTS: *W. G.* Polypodium vulgare cambricum.—*O. R. T.* 1, Bletia hyacinthina; 2, Trichopilia laxa; 3, Angræcum falcatum; 4, Masdevallia amabilis; 5, Pleurothallis lateritea. —*F. H., Acton.* 1, Odontoglossum blandum; 2, Sophronitis cernua; 3, Miltonia Warscewiczii; 4, Oncidium phymatochilum; 5, Selaginella stolonifera.—*A. M.* Eranthemum pulchellum and Primula denticulata.—*W. B.* Cyranthus angustifolia.

PEACHES AND NECTARINES FAILING: *A. J.* There is no disease present. The tips of the growths sent are imperfectly ripened, and consequently unable to support the buds. We suspect that the soil of the border is not sufficiently firm.

PEACH SHOOTS: *H. G. L.* The condition of the Peach shoots sent is caused by a sudden lowering of the temperature, probably by admitting cold winds to the tender leaves. Syringing the foliage with very cold water would also cause the leaves to become pale in colour and to curl and drop.

PELARGONIUM LEAVES: *H. J.* The spots on the leaves are not caused by disease, but are due to cultural errors: usually to excess of water at the root. Remove the affected leaves, keep the plants drier at the roots, and maintain a drier atmosphere.

PROPAGATION OF DELPHINIUMS: *Correspondent.* According to the more or less indefinite recommendations of a number of text books the time to increase hardy, herbaceous flowering plants in general is when so many inches of new growth have been made in spring. The statement is true of some plants and untrue of others. It is true of Delphiniums, and as the subject is of a seasonable nature no apology is offered for referring to it in some detail. The root-stock is made up of a number of crown buds and shoots, a fleshy to woody underground portion, and deeper still the root-fibres. In some instances the crown buds are numerous but the woody portion of a decidedly contracted nature, and successful division in these circumstances is not an easy matter. Moreover, it is not possible to secure root-fibres to the large number of shoots present in the crown tuft. Hence propagation from cuttings has a value of its own. In all the circumstances the correct method of procedure is to first wash away in water all soil from the roots of the plants. This gives a clue to the nature of the root-stock, and the direction of the roots, so that the operator need not work in the dark. By laying a plant on its side and inserting the point of a strong pruning knife into the root-stock a little below the crown buds division is effected, and in the case of large plants, the root development of which is normal, the operation may be several times repeated. Where, however, as often happens, the root-stock is either contracted or hollow, this cannot be done, and recourse must be made to the cutting method. In the hands of the experienced cultivator this matter presents no difficulty; to others less experienced, however, the difficulties appear insurmountable. In the case of the Delphinium only one type of cutting is of service, namely, that which has been detached from the main portion of the root-stock, in such a way that part of the latter is left to form a heel. Such cuttings have at their bases bud growths, and latent buds, which produce the new plant. They require to be carefully detached by the aid of a knife. Attempts to pull them off often result in breaking them, leaving the base portion behind; and such cuttings are useless. The correct type of cutting will root to almost cent. per cent. in a cold frame. Delphinium cuttings are impatient of artificial heat, and if subjected to it will quickly exhaust themselves by undue elongation. Attempts to root the stem growth of the Delphinium invariably end in failure, for the simple reason that the stem-growth is hollow; there are no joints with their usual reserve of sap, or bud growth to form the basis of a new plant. Moreover, it is of annual duration only, hence the reason of its failure as a cutting and the need for base eyes and buds for perpetuating its perennial characteristics. Delphiniums may be safely divided in March, or when 4 inches of new growth is apparent. The "heel" cuttings should be inserted in a bed of sandy soil in a sheltered cold frame. Pots or boxes for cuttings are not recommended, as the soil in them dries too quickly. When the cuttings are rooted pot them up and place them in a frame for a time and finally plant out. Delphiniums should be divided every second or third year. For "Pyrethrum" see next week's issue.

SEEDS OF GORSE: "*Tiverton.*" It will be of no use to sow the immature Gorse seed, for the pods are only just formed and contain only immature seeds, which do not possess the power of germination, and will not be ripe until May or June. The best time to sow is in March or April, scattering the seeds very thinly where they are to grow. Ripe seeds can be purchased very cheaply at the present time. A quarter of a pound will sow a quarter of an acre or more of ground.

SILVER BIRCH: *R. S.* The native Birch is a variable tree. The "Silver Birch" and its pubescent variety may often be seen growing side by side, but, unfortunately, some nurserymen do not take sufficient care, when procuring seed of the Birch, to ensure that the two forms are kept separate. No definite age can be named when the silvery bark, which is such a delightful characteristic of Betula alba, is exposed, nor can height alone be considered a definite guide. But as a general rule if the trees are "Silver Birches" we should expect the silvery character to be apparent when they have attained to a height of from 10 feet to 15 feet. As the examples mentioned in your letter have been grown closely together in the nursery they are probably "drawn up," and are consequently tall for their age, so that the silvery bark will not be apparent for a few years. If, as you evidently fear, the trees are of the pubescent variety, this desirable characteristic will remain practically absent. Any person thoroughly acquainted with the Birch could, on examining the trees, identify them, as the characters of the two forms are constant.

Communications Received.—G. E. L.—W. G. K.—C. G. C.—W. J. W.—M. and Co.—J. F.—S. C.—E. C.—D. H. P.—W. G. S.—G. S.—Rev. E. H.—L. K.



BROWN TAIL MOTH (EUPROCTIS CHRYSORRHOEA)

Male Moth in flight; female on leaf.

THE
Gardeners' Chronicle

No. 1,366.—SATURDAY, March 1, 1913.

CONTENTS.

Answers to Correspondents 144
Aphelandras 131
Batty Langley as a Gardener 143
Bean aphis, the... ... 136
Beet, Sugar 137
Begonia manicata ... 135
Books, notices of—
Mendel's principles of Heredity 131
Practical Agricultural Chemistry 130
Botanical Magazine, the 137
China, plant collecting in... 129
Clover sickness... ... 136
Combretaceæ, the South African 140
Edgworthia chrysantha 135
Florists' flowers—
Cyclamen culture 130
Forestry—
Broncho grass... ... 137
Prices of Home-grown Timber 141
Fruit Trees, the cultivation of 130
Hops, the manuring of 137
Horticulture, what is ... 138
Jaysinia Botanic Garden, the 139
Kent Fruit Research Station, the 137
Kew Guild, Journal of 137
Law Note... 141
Megaclinium triste ... 131
Moth—The Brown Tail 132
Nursery notes—
Primulas and Cyclamen at Reading ... 132
Orchid notes and gleanings 139
Rockery, the ideal: its construction 133
Scotland, notes from ... 142
Societies—
British Gardeners' Association, Chester 142
Edinburgh Botanical 142
Gardeners' Debating 140
Royal Horticultural 142
Royal Meteorological 142
Sugar Beet 137
Week's work, the... 134, 135
Zephyranthes, the .. 141

ILLUSTRATIONS.

Acantholimon Venustum, in the Jaysinia botanic garde 138
China, views in 129, 130
Laryngium alpinum, in the Jaysinia botanic garden ... 139
Genista horrida, in the Jaysinia botanic garden ... 140
Megaclinium triste 131

PLANT COLLECTING IN CHINA

A VOYAGE UP THE HAN RIVER.

THE great Yunnan plateau, guttered by the rivers flowing south from Tibet, of which the best-known are the Salween and Mekong, maintains an average altitude of about 8,000 feet, and enjoys a more or less monsoon climate, with alternating wet (summer) and dry (winter) seasons. The river-divides, however, rise to an altitude of 12,000 feet, and are covered with snow for several months in the year, while even at 5,000 feet sharp frosts are experienced throughout the winter, though the days are genial enough. It is only in the deep valleys, where the rivers flow from 2,000 to 3,000 feet above sea-level, that a typical monsoon forest vegetation prevails; for the most part it is a north temperate flora on the plateau, with Alpine conditions on the summits of the dividing ridges, but the abrupt transitions are not the least astonishing feature of the plateau.

Emerging at the end of February from the forests of Upper Burma on to the bare hills which form the approach to Teng-yue, we found hedges of a Cactus-like Euphorbia, tall Agaves and Aloes, prickly Pears, Pandanus, and in the villages, rows of sacred Ficus trees spreading shade all round—remnants of a tropical climate which quickly die out at the higher levels.

Soon the old Teng-yue volcano—said to have been active within the last four centuries—showed up, and later we crossed one of its cindery lava streams, an appallingly savage, petrified river only half concealed beneath a growth of low, thorny shrubs and great masses of water-storing Orchids, amongst which species of Cymbidium and Dendrobium were conspicuous. The city of Teng-yue stands on a small plain 5,400 feet above the sea. Rice is grown everywhere on the plain, across which flows a brisk little stream on its way to join the Irrawaddy, but the hills which rise on every side appear at first sight rather bare. However, a ride over the downs soon brings to light unexpected copses and deep, red-banked lanes not unworthy of Devon itself, with hedges of Thea japonica and canary-yellow Jasminum primulinum bearing curious double flowers, doubtless produced by cultivation. Groves of slender Poplars, full of woodcock, occupy the damper pockets, sometimes springing up within the walled city, thus breaking the monotony of grey roofs, and in the distant spinneys, where one may sometimes put up a barking deer besides a great variety of gorgeous pheasants, occur delightful trees of Cryptomeria.

The banks are often covered with a matting of Lycopodium and ferns which conceal purple Pleiones already in bloom at the end of March. In places the brown grassy downs (not green till the rains break) are blue with the little Gentiana aprica, a plant of wide distribution in China, occurring as far north as Kansu. From Teng-yue we climb up a couple of thousand feet, only to descend immediately to the Shweli River, after which comes the long climb, first over grass-covered slopes, then through a belt of Alders, becoming more and more moss-covered as we ascend, and finally we make our way through mixed forest to the crest of the Shweli-Salween divide, here covered with crimson-flowered Rhododendron Delavayi and with Pines, which thrive in the sandy soil derived from disintegrating granite.

Descending to the Salween we pass through rich jungle, with Musas, Lianes, Epiphytes (Aroids, Ferns, and Orchids) all round us, but also familiar trees, such as Birch and Alder; for this valley receives the full benefit of the monsoon rains, in strange contrast with the deep rift where flows the Mekong, which we cross next.

Seen from the opposite slope this rich forest presented a magnificent bank of colour, for interspersed with the pale skeletons of leafless trees and the dark Conifers are masses of bursting buds, prominent as spots of green and yellow light, mingled elsewhere with the varied tints of dying leaves.

The Salween Valley itself, a malarious spot inhabited only by Shans—since the Chinese are unable effectively to withstand fever—is rich in scattered trees, particularly Leguminosæ, such as Cæsalpinia japonica, now in flower.

It is perhaps this scourge of malaria which has been grotesquely personified by the Chinese, who assert that a vast monster, known as the "blanket fish," inhabits the Salween and gobbles up people who are rash enough to reside in the "valley of the shadow of death," and those who are acquainted with the bathos of Chinese legends which seek a romantic origin for prosaic occurrences will accept the explanation. The Chinese are reluctant even to cross the danger zone during the rains, and indeed it may be confidently stated that the Yunnan plateau during the summer months is no place to travel.

Between the Salween and Mekong the much dissected hills are covered with grass and Pines, and at night we would watch the crawling rings of fire travelling over the slopes where clearing was in progress; round the villages Peach and Pear trees displayed masses of blossom, and here are hedges of deliciously scented white Jasmine, balls of which our muleteers buy from the children to dangle from their coats.

The cliffs of the narrow Mekong trench are extraordinarily stark and bare in comparison to the Salween valley, and we seem momentarily to have come into quite a different climate; however, it is but temporary, a local heating effect on the shut-in gorges, and we are soon up on the well-wooded plateau again, now blazing with colour where the Rhododendron trees are bursting into crimson, and with pink and white Camellias. In marshy places are colonies of mauve Primula denticulata with dense agglomerations of flowers; one head I counted had over 70, 40 of them being in bloom. Alternating with shallow valleys clothed with shady groves of Alder, Willow, and Poplar, were hillsides covered with shrubs, a pale pink Daphne and yellow pyramids of the pinnate-leaved Berberis nepalensis being noticeable.

After descending to the Yang-pi River we saw in front of us the snow-clad Tali range, and continued some miles down the valley to a gap in the mountains. Slung across the Yang-pi River was a suspension bridge made of twisted Lianes, which sagged at least 6 feet in the middle, and swayed and wriggled in all directions as one crossed.

Near by this spot I found a peculiar flowering shrub. On the outside of the calyx and situated close together were two red spots, nectaries secret



FIG. 58.—HILLS AROUND TENG YUE, W. YUNNAN.

ing a sweet, sticky fluid. In the young bud these glands are conspicuous, but in the open flower they are hidden by the reflexed petals, and I was amused to see ants biting through the petals in order to reach the sticky nectar; when I removed the petal with the point of a knife the ant at once set to work on the gland, but in the ordinary way he must first crawl over the flower in order to locate the position of the nectaries and thus he transfers pollen from flower to flower. One stamen is much longer than the other nine, and protrudes with the style, thereby making provision for self-pollination. Besides the ants there were small beetles crawling over the flowers, which stood a remarkably good chance of cross-pollination, thanks to this ingenious yet simple device of extrafloral nectaries and reflexed petals.

On March 31 we reached Tali-fu, situated in a plain chiefly occupied by a lake, 6,700 feet above sea-level (see Fig. 59). It is a fine site for a city, backed by a range of mountains 14,000 feet high, and as much of the walled-in area is occupied by market gardens and trees (always a grim reminder of tragedy in the past) it gives a very pleasing effect. The narrow platform between the mountains and the lake is cultivated, and carried crops of Wheat, Beans, Flax, Rice, and so on, but the undulating ground towards the base of the mountains is strewn with thousands of grave mounds, another reminder of the black page in the history of Tali.

From here we turned northwards to the region of the parallel rivers, and a week's travel brought us at last to China's greatest river, the famous Yangtze, flowing at a considerably higher elevation than were the Salween and Mekong when last seen. All round were masses of Chionanthus trees in full bloom, a sight to which I have previously alluded in admiration, and behind us, the plateau of Yunnan. *F. Kingdon Ward.*

FLORISTS' FLOWERS.

CYCLAMEN CULTURE.

Correspondents have before now complained that Cyclamen seedlings are very slow in making growth, but it is quite possible, with proper treatment, to produce plants with corms considerably larger than a half-crown piece, and carrying from fifty to sixty flowers in twenty months from sowing the seed. The time of sowing the seed should be regulated by the season at which the plants are required to be at their best. Supposing this to be, say, November, when they will remain in flower until Christmas or later, the seed should be sown during the first week of March in a compost of leaf-mould, loam, peat, and sand in equal proportions. The whole should be finely sifted and the pans well drained, the crocks being covered with a layer of moss. The pans should be introduced into a temperature of 65° and covered with a pane of glass, on which a layer of moss should be spread. The seedlings will appear very quickly, when the pane of glass should be removed and the pans placed upon a shelf near the glass roof, surrounded by moss, which must be kept damp. Directly the seedlings show the second leaf, weak solutions of soot-water and liquid cow-manure may be given alternately with pure water. By the end of April the corms will be as large as Peas, and the plants may be placed in 2½-inch pots, one crock being used for each pot, and over it a few pieces of rough cow-manure should be placed. A similar compost to that used for the seed-pans is employed, except that it should contain less sand and that the soil should not be sifted. The pots should now be placed on a shelf near the glass, where they should remain through the summer, the glass being rather heavily whitened. The moss, with which the shelf must be thickly spread, and the walls being kept in a continually damp condition, so that the surrounding atmosphere may be plentifully charged with moisture. If this matter be carefully attended to, the temperature of the house may run up to 90° without the plants being injuriously affected. In August they will be ready for another shift, this time into 5-inch pots. In these pots they may remain throughout the following winter in a temperature of 65°. All flower-buds must be picked off as soon as they appear. About May in the following year the plants should be allowed to become moderately dry at the roots, though the moss surrounding them must always be kept moist. Early in June they should receive their final potting, and ought to be large enough to be placed in 6-inch pots, the soil being merely broken up roughly and the peat omitted. Two inches of drainage should be given, over which, as in the previous pottings, rough cow-manure should be laid. The compost must never be made absolutely firm, but should be loose enough after the potting is completed for the finger to be inserted into it without



Fig. 59.
MOUNTAIN LAKE ON THE YUNNAN PLATEAU.

difficulty. After the final potting, the plants should be placed in a close frame, which should be shaded until they have taken hold of the fresh soil. Then air may be gradually admitted and the lights entirely removed before August. If the season prove exceptionally rainy, care must be taken that the soil does not become saturated with moisture, and to effect this the lights may be temporarily replaced, but always kept tilted. Every bud must be removed until October 1, when the plants may be brought into the house, and, after a week or so in the cool section, removed into a temperature of 65°. The pots will now be completely covered with leaves, and the flower-buds pushing up strongly. During the whole period of their growth, except immediately after the pottings, when the roots are taking hold of the fresh soil, alternate waterings should consist of some well-diluted fertiliser, but on no account should this be given in a concentrated form at any period of their existence, the application of strong manures having a more deleterious effect on plant-life than is generally realised. Care should be taken that insect pests are at no time permitted to effect a lodgment on the plants. Periodical use of the XL evaporator will, however, keep these pests at bay. Treated in the manner above described, fine, healthy plants, bearing six or seven dozen blossoms, can be obtained in twenty months from seed. *Wyndham Fitzherbert.*

NOTICES OF BOOKS.

Practical Agricultural Chemistry.*

This work is intended primarily for the use of students who are preparing for the London B.Sc. degree in Agriculture.

It assumes a fair knowledge of general chemistry, and, although devoted more particularly to the practical work of a course in agricultural chemistry, is saved from being a mere catalogue of analytical methods by the introduction of brief accounts of the several substances on which the analyses and other experiments are made. The book shows evidence of very thorough and careful preparation, and may be recommended to students who, possessing a grounding in the elements of chemistry, are desirous of learning practically those parts of this subject which are of importance to the agriculturist and the horticulturist.

The methods of analysis of the chief constituents of soils and of manures are given in clear and thorough style, and it may be said with confidence that a student who has worked through the exercises in this book will be in a position to deal effectively with any problem of chemical analysis likely to crop up in the course of his experience on a farm. The brief references to botanical aspects of the subject might perhaps have been omitted; for a student who is to make profitable use of this book must know already the general characteristics of such substances as starch, chlorophyll and the like. The photo-micrographs of starch granules as exhibited in Fig. 9 scarcely deserve inclusion in a volume which is particularly well printed and illustrated. Only those who have been engaged in the production of works of this type know how great is the labour required to produce a serviceable book of "practical work," and all who have had this experience will recognise that Messrs. Auld and Ker have discharged their task in an admirable manner.

The Cultivation of Fruit Trees.†

The first edition of Professor Dufour's treatise on the cultivation of fruit, though issued only a year ago, met with such demand that it is already exhausted. The present, second edition has been revised and enlarged. Among the additions, the new section on Pomology is the most important, and contains numerous figures illustrating the form of the chief varieties of fruits.

The distribution of subjects following in this work is as follows:—Part I. (pp. 5-28) gives a brief account of the anatomy and physiology of plants in their application to fruit culture; Part II. (pp. 29-56) deals with methods of propagation; Part III. (pp. 57-139) is concerned with the cultivation of different fruits—Pear, Apple, Quince, Medlar, Peach, Apricot, Cherry, Plum, Vine, Raspberry, Currant, Hazel Nut, Walnut, Mulberry, Almond, and Fig; Part IV. (pp. 141-207) deals with pruning; Part V. (pp. 209-260) with methods of exploitation of fruit; and Part VI. with Pomology.

We could wish that the work before us were in English, instead of in French, in order that it might be consulted and used by the general

* *Practical Agricultural Chemistry.* By S. J. M. Auld, D.Sc., and D. R. Edwardes-Ker, B.Sc. (London: John Murray.)

† *Traité Complet d'Arboriculture Fruitière.* By F. Dufour, Professeur à l'école d'horticulture de l'Etat à Velvorde. Second edition, revised and enlarged. F. 3.50.

body of fruit-growers of this country. Each subject is dealt with in a masterly way, and in direct and simple style. First place is given to cultural methods, and the importance of such matters as manuring, insect and fungus pests, is neither magnified nor ignored. The author does this country the honour of singing its praises as a market, but we do not exaggerate when we say that if more of our growers studied his methods of cultivation the scope of that market for import purposes would soon become restricted.

Mendel's Principles of Heredity.*

Though only published in 1909, and re-issued within a year, Professor Bateson's well-known book has been out of print for some months. It is one which those who have desire to keep, and for many lately it was only to be procured by some form of borrowing. A new impression cannot fail to be welcomed by those who already have it as well as by those who have it not. Except for a few small alterations and corrections, the work is the same as when it originally appeared. The only addition is an appendix of some seventeen pages containing brief notes of the more important papers that have appeared during the past three years. In refusing to disturb the original text we feel that the author has acted wisely. Those who are familiar with the ever-increasing output of research in genetics cannot fail to be struck with the fact that one work is invariably cited in any discussion of results. *Mendel's Principles of Heredity* is already a classic. It marks a position of stability towards which previous work is now seen to have logically converged, and from which new and active research is to-day no less logically diverging.

The various waves of biological thought are constantly intersecting, mingling, and passing on with altered rhythm, but it rarely happens that so many meet together at a nodal point as during the last decade. Heredity, variation, evolution, the physiologyy of reproduction, the chemistry of pigmentation, the nature of disease, cytology, and eugenics—these are some of the waves which for the moment have met together at that nodal point. As an analysis of that point, as a picture of how it has come into being, and as a foreshadowing of happenings in the near future, *Mendel's Principles* stands alone, and it is good to know that the generations of students now growing up cannot be cut off from the possession of a book so full of inspiration.

And now the waves are sweeping on, some diverging less and some diverging more, and it may be long before such another discovery as that of Mendel forces them once more to a common focus. There is hardly a department of biological thought in which the disturbance is not being felt. The cytologist, peering through his microscope, is catching at possible new meanings in the behaviour of the minute chromosomes over which he has so long puzzled. In the museum a new guiding principle is dawning on the systematist as he steadily plods through the multifarious forms of life, ever cataloguing and arranging. For the bio-chemist the recent discoveries in the genetics of colour in flowers have opened up a fresh line of attack on the chemical processes underlying vital phenomena in plants and animals. Things strange and little understood, the peculiarities of parthenogenetic reproduction, the behaviour of graft hybrids, or the eccentricities of hybridisation, are beginning to take their place in the orderly scheme. And what to many will appear most important of all are the possibilities held out by the new knowledge of control over disease and deformity, whether in animal or plant. Into the wilderness of ignorance is pouring a new generation of workers, armed with new tools, new hopes, and new aspirations. To-day it is the age of spadework for the physiologist, the physician, the bio-chemist, and the student of genetics, each on his own particular plot. The area is vast and the time is slow, and it would seem as though many years must go by before they can once more join hands to plan out the fair garden of which they dream.

That is why we feel that this book of Professor Bateson's stands alone. It stands alone because the opportunity was unique. Yesterday it was to be done—to-morrow it will take many treatises to cover the same ground. Perhaps later on opportunity may come once more, and if so we can only hope that Professor Bateson will be here to seize it once more for us.

* *Mendel's Principles of Heredity.* By W. Bateson F.R.S., V.M.H. Third Impression, with Additions, 1913. London: Cambridge University Press.) Price 12s. net.

NEW OR NOTEWORTHY PLANTS.

MEGACLINIUM TRISTE.

The curious and somewhat snake-like flower-spike of this Orchid (from Sir Frank Crisp's collection) arises from the base of an obtusely angular pseudobulb, which bears a pair of strap-shaped leaves 3-5 inches long at its apex. At the base of the spike the peduncle makes an abrupt curve, and when in bud the spike has somewhat the appearance of a green spear-head or stout flattened blade, caused by the boat-shaped bracts closely overlapping each other on either side; as the flowers develop they spread out in two rows. The flowers (see Fig. 60) are fanciful in appearance on account of the black petals resembling a pair of curved horns; they are velvety all over the inner surface. The dorsal sepal stands straight out, is lanceolate, acute and spotted with black or blackish-brown on a pale yellowish-green ground. The lateral sepals are broadly sickle-shaped and curve so that their tips meet under the lips; they are banded with blackish on a very pale greenish ground. The small lip is fringed with sharp teeth on the margins of the basal portion and the apical part is recurved and entire.



Fig. 60. MEGACLINIUM TRISTE.

The native country is unknown, but it is believed to have been imported from West Tropical Africa.

PLANT NOTES.

APHELANDRAS.

In common with many other Acanthaceous plants, no regular season can be assigned for the flowering of the different Aphelandras, the bright-coloured blossoms of which are produced at various times of the year. It is, however, during the dull autumn and winter months that they are most appreciated, and it may be noted that they flower quite as frequently at these periods as at any other time.

They are, like many of their allies, of a half-shrubby character, and can be readily struck from cuttings of the young shoots during the growing season. Ordinary potting compost with a somewhat liberal admixture of good leaf-mould suits them well, and they thrive better in the temperature of the intermediate house than in the stove, where they are more liable to run up tall and weak. In all cases the flowers are borne in a dense terminal spike, the size depending upon the vigour of the specimen. Owing to this it is useless to pinch the leading shoot of young plants in order to ensure the production of side shoots, as even if two or three laterals push out, the flowers borne by them are not of much account.

Single-stemmed plants as vigorous and as well furnished with leaves as possible must therefore be the objects aimed at, for such plants produce the finest heads of blossom.

The beauty of the flowers is not the only claim to recognition possessed by the different Aphelandras. In most of them each flower is accompanied by a large, brightly-coloured bract which retains its freshness even after the beauty of the blossom is gone. From a foliage point of view, also, some of them are very beautiful, notably A. aurantiaca Roezlii, A. Chamissoniana, A. fascinator, A. Margaritæ, and A. squarrosa Leopoldi.

The smaller growing kinds, such as A. aurantiaca and A. pumila, form pretty little specimens when three, four, or five are grown together in a deep pan.

By far the oldest member of the genus and the largest grower is A. tetragona, also known as A. cristata. Single specimens of this may be grown in pots 7 or 8 inches in diameter. In this way it will reach a height of 3 feet or more, the stout, sturdy stem being clothed with large, broadly ovate leaves. The flowers, which are rich scarlet in colour, are disposed in an erect decussate spike, while, unlike the others, four supplementary spikes start from the base of the principal one, and thus continue the floral display. Their bold, stately habit makes flowering plants of this Aphelandra very effective in decorative groups.

Other species that claim recognition are A. aurantiaca, a dwarf plant with ovate leaves and orange-scarlet flowers. The variety Roezlii has the leaves suffused with white, and in A. Chamissoniana the leaves have the course of the mid-rib and principal veins marked with white, which breaks up into freckles towards the edge. The large bracts are of a deep chrome yellow shaded with green at the base, and the flowers are of a lighter tint. A. fascinator, a somewhat weak grower, has olive-green leaves, marked with stripes of silvery-white, and bears brilliant scarlet flowers. A. Margaritæ has orange flowers and dark-tinted leaves veined with white, their pubescent character forming a very distinctive feature. A. nitens has exceedingly glossy leaves, bronzy-green above and purple beneath. The flowers are large and of a bright-scarlet colour. A. pumila is of dwarf growth with orange-scarlet flowers. A. squarrosa Leopoldii has the showiest foliage of all, the leaves being large and with the principal veins marked with ivory white. The flowers and bracts are yellow

W. *T*

DESTRUCTIVE INSECTS AND PESTS SCHEDULED BY THE BOARD OF AGRICULTURE AND FISHERIES.*

VI.—THE BROWN TAIL MOTH.

(*See Coloured Plate.*)

THE larvæ of a considerable number of moths are responsible for very serious damage to forest trees, shrubs, etc., and three such moths have been "scheduled," as noted in the *Gardeners' Chronicle* for September 27 last. Of these the Brown Tail Moth (Euproctis chrysorrhœa, Linné), illustrated in the Coloured Supplement, occurs frequently in Great Britain, but is local, and not often sufficiently plentiful to prove a pest, though it may be harmful in isolated cases. On the Continent and in the United States, however, it often occurs in vast swarms and may cause great loss, the caterpillars in their thousands devouring the foliage of all kinds of trees. It has been known in Europe for about two hundred years, and according to Howard (1906) laws requiring property owners to clear their trees of the winter nests have been in operation for nearly a hundred years in parts of Europe. It seems to have been first found in America in 1897, in Massachusetts, being identified by Fernald and Kirkland, who in 1903 published a list of over eighty food plants of this pest.

Broad-leaved trees only seem to be attacked, and among the species may be mentioned Apple, Pear, Plum, Elm, Oak, Beech, Poplar, Willow, Black-thorn, and White-thorn. The defoliation in any case leads to loss of timber, and if complete for three or four years in succession results in the death of the trees. In the case of fruit trees, of course, the loss may be even more serious, large quantities of valuable fruit being either reduced in value or completely ruined. In the neighbourhood of Boston thousands of fruit trees have been killed by this pest.

Schlich says that in the Berlin Zoological Gardens (*Thiergarten*) the caterpillars destroy the foliage almost every year, and it is recorded by Rogers and Burgess that in 1909 these gardens—really a large park—were closed to the public owing to the large numbers of the insect which were defoliating the trees. This action appears to have been in part due to the fact that persons visiting the grounds were subject to serious poisoning by coming into contact with the caterpillars. This poisoning is well known, and has long been held to be due to the barbed hairs of the caterpillars—and to a less extent of the moths—piercing the skin and causing irritation, or being inhaled when floating in the air and causing internal poisoning. Tyzzer (Harvard) concluded from his investigations that the barbed hairs not only cause mechanical irritation, but contain a poison which acts directly on the blood corpuscles. Rogers and Burgess state (1910) that "The poisoning has caused very serious illness to men engaged in the work against the moths, in the field and at the Parasite Laboratory, and each year many are obliged to seek other employment, and not a few have been under a physician's care.

It is remarked by Theobald that one of the curious features is that this pest may occur in one year in enormous numbers and then completely disappear, and he quotes Kollar to the effect that in 1782 great alarm was caused by the extent of the infestation and the immense numbers of the colonies of caterpillars. In many parishes near London 1s. per bushel was paid for the collected webs, and it is stated by Curtis that in some churches prayers were offered for deliverance from the apprehended calamity.

A good idea of the appearance of this moth is given by the Coloured Plate. Both the male and female moths are white, with a brown to golden-brown tuft at the hind end—this tuft giving rise to the common name of the moth. The abdomen is much larger in the female than in the male, the latter, however, having larger and more boldly combed antennæ, which are brownish in the male, but white in the female. Black spots may appear towards the front edge of the fore wings, but more often in the male, according to one authority. The moths are about 1½ inches in spread of wings, the males in general being the smaller. The eggs are small and round, yellowish in colour, deposited in elongated clusters of 200 to 400 on the under side of a leaf, and covered with hairs.

The caterpillars are dirty yellow in colour in the first year when small, but attain, after hibernating and moulting several times, their full size of 1 to 1½ inches in length. They are now dark brown to nearly black, and are covered with tufts of yellowish-brown hairs on the back and sides. These are two broken or wavy reddish lines along the back, and a row of almost white spots along each side.

The pupa is rather over half an inch long, deep brown in colour, rather hairy, pointed towards the tail end, and enclosed in a dusky, greyish brown or greyish cocoon composed of silk interwoven with hairs from the bodies of the caterpillars.

The life-history of this moth is interesting. The eggs are laid about July and in August, and the resulting tiny caterpillars feed on leaves. In September and October they make webs or tents in which they live gregariously, sheltered from the cold and wet, and in these tents they pass the winter. The webs, which are of silk spun between leaves and the skeletons of leaves, are 5 or 6 inches long, and may contain 200 or more caterpillars, which are perhaps one-fourth grown. "The web is divided by cross partitions into small pockets, in each of which one or more of the larvæ remain during the winter." It is usually placed near the tip of a branch. One or two moults occur in autumn, and with the advent of cold weather the larvæ enter the web and seal up the exit holes. In spring the caterpillars leave their winter quarters and attack unfolding buds, blossoms, and new foliage, wandering all over the tree and moulting with their increased growth. Howard remarks that "Apparently half-starved by their long hibernation, they come out with voracious appetites, and the amount of damage done by them at this time is extraordinary." In June and July the caterpillars are full grown and pupate in cocoons spun among the leaves or in any position which gives reasonable shelter, a number of cocoons usually being together in a webbed mass. The moths appear about July and August after a pupal stage of about three weeks—20 days.

As its life-history suggests, the Brown Tail Moth may be combated in several ways. As noted above, the eggs are laid in clusters, and these may be searched for and destroyed. The chief measure, however, consists in the collection of the nests of caterpillars in winter, these being readily seen after the leaves have fallen. The twigs bearing the nests should be pruned off, collected together and burnt. This measure must be practised before the period of the breaking of buds in early spring, or the caterpillars will have deserted the webs. When the caterpillars are already on the trees, spraying with arsenate of lead is the best measure that can be adopted, as for most leaf-eating insects. It is stated by Rogers and Burgess that in 1909 nearly 500 tons of this poison were used in New England for spraying purposes. Schlich says that the cuckoo and titmice are useful in destroying this insect. A natural enemy of the Brown Tail and Gipsy Moths is the beetle Calosoma sycophanta, L., of the family Carabidæ, both larvæ and beetles devouring the caterpillars. Information on this beetle in this connection was published by Réaumur in 1736, by Burmeister in 1836, and later by Westwood and De La Pouge, while in 1911 a full account of it was published in a 94-page *Bulletin* (No. 101) by Burgess (*Bur. Entom., U.S. Dept. Agric.*). An account of this moth is given in *Leaflet* No. 69 of the Board of Agriculture and Fisheries. *H. C. Long.*

* Previous articles appeared on September 28, October 12, November 2, and December 7, 1912, and on February 1, 1913

NURSERY NOTES.

PRIMULAS AND CYCLAMEN AT READING.

There are few things more beautiful in the world of flowers than the Primulas and Cyclamens in Messrs. Sutton and Sons' establishment at Reading. The houses devoted to the cultivation of these plants are brilliant with blossom, and even a casual visitor cannot fail to wax enthusiastic over the charm and loveliness of the flowers.

To the visitor who can appreciate perfect cultivation or to him who knows something of the history of such a plant as the Chinese Primrose, the exhibition provided by Messrs. Sutton appeals with double force.

Nearly 100 years ago the Chinese Primula came to us; an interesting novelty, but not conspicuously attractive. In the interval it has become one of the most beautiful and useful of greenhouse plants. The history of the improvement of the Chinese Primrose is a horticultural romance. From the day of its advent it appealed to the discerning eye of the florists who, forthwith, set about improving it. The plant responded so generously to the efforts of the nurserymen that now, on looking at such a collection as that displayed in the Reading Trial Grounds, one would think that the Primulas are not one species, but the mixed progeny of half a dozen.

Nevertheless, all the evidence goes to show that Primula sinensis is a good species, and hence the wonderful diversity of colour and of form which it now exhibits must be attributed to the plasticity of the plant and the skill of the cultivator.

How great is this diversity may be gauged from the facts that Messrs. Sutton send out no fewer than 24 varieties in one section alone, and that they could easily double that number. Each of these varieties breeds true to type, so that those who care to do so and are able to take the necessary precautions may save their own seed.

To walk through the ranges of houses at Reading is to gain a liberal education in the art of cultivation and in the variation of plants. The variety presented by the Chinese Primrose is so lavish as to be at first bewildering, and closer inspection serves but to bring to light yet further variation. Nevertheless, as the eye becomes familiar with the plants, it is possible to classify the variations into sections, and this work is rendered the easier by reason of the admirable manner in which the plants are grouped.

All the cultivated Primulas fall into one or other of four great groups:—The star or stellate, the "sinensis," the giant, and double sections. The stars, which are best loved by all who appreciate airy grace, are characterised by tall and slender inflorescences which bear groups of flowers in tiers. The flowers themselves are smooth-edged, with a central notch. Within this section the colour is almost endless, ranging from pure white, through pink, red, crimson to blue. The foliage may be palm-like or fern-like, and the colour of the flower peduncles is pale red, full red, dark red or green. Remarkable in this stellata group are the newer, white, eyeless forms; plants in which the normal yellow eye has been suppressed so that the flower is pure white. Also remarkable and most charming is "Coral Pink" in stellata habit. This colour-variety arose in the sinensis section, coral pink making its appearance suddenly among plants of the old and excellent variety, Crimson King. To the plant breeder it was an easy task to transfer the coral-pink colour to plants of stellata habit, and the result is, as we have indicated, the production of one of the most delicately beautiful of all Chinese Primroses.

The sinensis section is distinguished by the possession of flowers, the edges of whose petals are not notched but jagged, by the larger size of the flowers, by the stouter flower stalks, and by the less marked and more belated tiering. Owing to this last character the flower heads are more compact than those of the stellata section; though as the plants grow older the main peduncle

grows up and produces a second or even a third tier of flowers. Crimson King and Duchess, both well-established and universal favourites, are among the most beautiful of this section; the former bearing flowers of a full crimson and the latter white with a rosy carmine flush around the yellow eye. We are grateful to popular taste which results in an enormous demand for seed of Duchess, in that it obliges Messrs. Sutton to grow this variety in great numbers and hence to produce a display of unsurpassed loveliness.

Czar also, though of such robust growth as to be classed perhaps as a semi-giant, belongs to the sinensis section. It is conspicuous by reason of its dark blue flowers, borne in dense heads on sturdy flower-stalks. Plants of better colour and habit than the Czars at Reading we have never seen. Nor must we omit to mention the pure white eyeless variety known as Queen Alexandra; for it is interesting not only by reason of its own beauty, but because it has supplied the means of creating eyeless forms of coloured varieties, which forms are both novel and pleasing. For those with a taste for the grotesque the white or pinkish sinensis plants on "parsley foliage" present attractions; but to most people the simpler symmetry of the palm and fern-leafed varieties will appeal. It is, perhaps, the giant section which displays best the extraordinary cultural skill exhibited by Mr. Macdonald and the other members of Messrs. Sutton's staff. It is true that anyone can grow giants, but to grow them as they are at Reading is by no means an easy task. The secret lies in the detailed attention to each individual plant—an attention doubly necessary when each plant is destined to become not only an object of admiration, but also a seed-bearer.

Of giants, Giant Royal White with pure, large flowers on dark foliage is most impressive, and is employed largely for table decoration. Giants Pink, Crimson, Terra-cotta and Lavender are among the other excellent varieties in this section; and the last-named is, we believe, one of the few exceptions to the rule that all these varieties are fixed and come perfectly true to seed. Giant Lavender is more erratic. It throws a large percentage of lavenders, some whites, and an occasional crimson or red. Moreover, there is a puzzle here for the student of Genetics, in that some of the whites which come out of Giant Lavender also throw lavenders and whites.

The doubles supply a bizarre element among Primulas. Those grown now differ from the old alba plena (double)—which is sterile—in forming perfect seed. The doubleness is due to a cleaving of petal rudiments into a number of sheets, so that in addition to the five exterior petals the flowers of the doubles have five or ten more "reversed" petals standing upright in the centre. Here, again, the colour range is almost endless, crimsons of light and dark shades and Duchess being amongst the most attractive. In passing mention may be made of the fact that Primula obconica, of which Messrs. Sutton's have a most interesting and varied collection, bids fair to rival P. sinensis in variability. This plant, which for many years resisted with an absolute stubbornness all inducement to change, has recently discarded its coyness and is producing flowers of the most diverse shades of colour. It is noteworthy, however, that so far as we have observed, it remains conservative with respect to its leaves, which are all of the typical form. This fact is worth recording for the sake of the historian of a future date; for it is certain that it will not be long before the leaves of Primula obconica become as diversely-shaped as those of P. sinensis.

CYCLAMEN.

Much as we are tempted to dwell on their many other points of beauty and interest we tear ourselves away from the Primulas and pass to the houses devoted to Cyclamen. Here, also, a wonderfully high standard of cultivation is maintained, and the flowering seedlings of this latter plant are as beautiful as—perhaps more beautiful than—the seedling Primulas.

Now that it is recognised that Cyclamen may be treated as "annuals," this plant is grown more and more for the purposes of winter decoration. For early flowering, though not for copiousness of blossoming, the seedling method of cultivation is to be recommended. Those who wish to prolong the season should raise plants each year, and also grow on the corms for a second year. The former give the early flowers (in December and January), and the latter the later and more floriferous plants. Of the numerous varieties, Giant White remains the most favoured; so many as 600—out of a total of some 5,000—plants of this variety are cultivated annually at Reading. Vulcan is attractive on account of the great depth of its dark crimson colour. Salmon Pink is one of the gayest, Scarlet, Giant Crimson and Cherry Red are all good, and the new Rosy Morn—with crimson base, blotched above, and handsome marbled foliage—is sure of a host of admirers. Fringed and double forms are numerous, and illustrate the infinite variety which the cultivator in partnership with Nature is able to evoke.

THE IDEAL ROCKERY: ITS CONSTRUCTION.

How few of our rockeries are what they should be in design and beauty! The fact is well known, and yet I venture to think the failure is not, as some pessimistic scoffers imagine, entirely attributable to either ignorance of things beautiful or to lack of imagination. Many of our best academicians would doubtless make poor rockery-builders.

The fault lies most frequently, I think, in the mere careless lack of observance of those natural laws to which a rockery or any piece of out-door gardening should be subject—most imperative in the case of the rockery, which is to represent Nature as a whole and also in the smallest detail.

The ideal rockery should be a mountain in miniature; therefore the nearer it approaches a mountain in its features the nearer it will be to perfection. The perfect rockery should have gorges leading to "passes" and other parts of the mountain, one of them ending in a "cirque." There should be flat, rocky plains with profound crevasses in which one may see beautiful hardy Ferns lying ensconced.

A moraine, of course, there must be; with large and small stones strewn along its bed—and a stream. The stream might traverse slowly, and with a winding course, a sandy flat-bottomed valley at the lower end of the moraine about half-way up the mountain. At the base of our mountain the stream should be made to meander for a distance amongst isolated rocks; in one place, through a miniature forest of dwarf Pines—in another place over shingle.

A great feature should be the Alpine meadow, boulder-strewn and with fine short grass planted with Gentiana verna, G. asclepiadea, Trollius, and other meadow species, the boulders (brought down from the heights by snow and frost in spring) being covered with a close crop of Sempervivum, Draba aizoides, encrusted Saxifragas and similar plants.

There should be screes, the loose stones found just before a summit is reached and formed by the frequent breaking away of masses from the summit itself—arid expanses for such plants as Club Moss, perhaps Dryas, a few kinds of Saxifraga, and some taller growers, but not made glaring by the presence of Alpine Phloxes or Aubrietias.

A summit crowns all, with its detached hillocks and separate little crags that have withstood the wear of centuries more successfully than the lower and worn hollows.

In the harsh climates of the more northern counties we have often to overcome difficulties that seldom occur on the lighter and drier soils of the south.

For instance, the owner of a garden with soil both cold and damp may, unlike his garden, have a warm corner in his heart, and that corner may cherish the wish for a rockery.

In this dank garden, with a clayey subsoil, there is only one spot available for a rockery, and that one of the worst—the extremity of a lawn sloping north. One must get height here, and if possible do away with a depth of the clay immediately under the rockery and for a small space all round as suggested by the sectional diagram (Fig. 61.).

If the clay is permitted to remain at its old level the water draining from the lawn above will flow along that level underground and a more or less stagnant and moist rockery will result, one in which Alpine Phloxes may be expected to die even in the first winter.

In the selection of a position for a rockery it often happens that where a gentle slope admits of it we may add much to height and general effect by cutting almost horizontally into the slope and forming a half-sunken rockery. Provided the ground trends towards the south, I should call this position a good one.

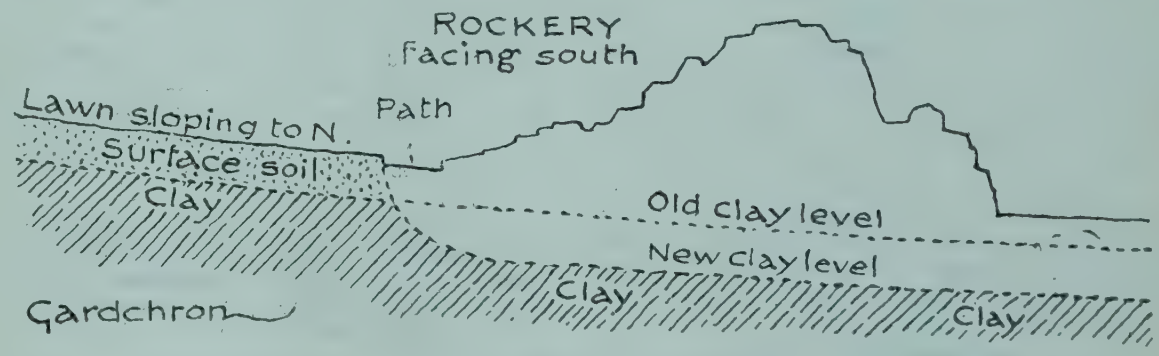


FIG. 61.—SECTION OF ROCKERY.

Very often it happens that the small rockery is constructed in some spot where "nothing else will really do."

The worst aspect is one facing to the north, for the proportion of good plants that will do on this face is not great.

The two best aspects are west and south, and for preference I should say the west, as there is then no danger of plants like Soldanellas and some Campanulas, the flowers of which are scorched by the sudden morning sun, being placed in positions facing east. Also the supply of moisture is surer than on the south side. Another point of more importance than at first appears is that the evening sunset light should fall on the rockery. This is a great advantage, for many persons have only time to enjoy their rockeries in early evenings.

It should be borne in mind, however, that the preference cannot always be given to the west. In a cold country with a moisture-retaining soil the plants require as much sun and warmth as possible.

The colour of the stone to be used must guide us somewhat in the choice of a position and aspect. For instance, it would not be advisable to use white stone for a hot, dry rockery facing south if we have other quieter-coloured stone at our disposal. I do not mean to suggest by this that two colours of stone should be used for one rockery, even on totally different aspects, but we shall discuss the matter of stone more fully on another occasion. *J. H.*

The Week's Work.

THE HARDY FRUIT GARDEN.

By B. GOODACRE, Gardener to Sir ERNEST CASSEL, Moulton Paddocks, Newmarket.

PROTECTION OF FRUIT TREES.—The cold weather has been very beneficial in retarding the too forward fruit buds, which were already beginning to show signs of activity; but with a change to milder weather the bloom will begin to expand and covering material should be put in readiness without delay.

I am not in favour of permanent protection where it can possibly be avoided. It has a tendency to weaken the flower and make the young growths tender. The latter are often found to suffer after the shading is removed, becoming blistered and unsightly.

For bush trees of the Apple, Pear, Plum, etc., I do not know a more convenient method than that of covering with light Spruce branches. These can be cut at any time and laid in clumps near the trees which they are to protect. They should be lightly laid on to the higher portions of the tree, using about three to each. Frost will in this way be kept from the bloom.

For wall trees, tiffany is without doubt the best material, but it must be fitted so that it can be removed daily. A good plan is to fix it to poles and work it up and down as a blind. Where tiffany is not available a double thickness of net will answer the purpose. If the walls are of a considerable length it is a good plan to build a wind-screen at intervals of 10 or 15 yards. These are easily made with branches or hurdles and wire Pea guards with straw.

GRAFTING.—Preparations may now be made for grafting the Apple, Pear, Plum, Cherry, etc. If stocks are not already cut back, this work should be done at once. Clay must be procured and well handled—a good method is to add a little cow manure, working the two well together.

Black Currants should be examined for big buds, which, if found, should be picked off and burnt, and the trees dressed with some approved insecticide.

Any planting which has been delayed should be undertaken at once.

THE KITCHEN GARDEN.

By JOHN DUNN, Foreman, Royal Gardens, Windsor.

ASPARAGUS.—If new plantations of Asparagus are to be made this season there should be no delay in trenching and preparing the land. This plant delights in light, rich soil, with plenty of good farmyard manure, but if the soil is of a heavy, retentive nature means must be adopted to render it sufficiently open and porous. This cannot be accomplished by the addition of large quantities of manure alone; a liberal quantity of rough river sand or the cleanings of ditches, which consist largely of sand and decayed vegetable matter, will be beneficial. In trenching land for Asparagus the subsoil should be thoroughly broken up and left in position, mixing with it, as the work proceeds, a liberal supply of old lime-rubble or anything which is likely to keep the bottom of the beds in a sweet and porous condition. The situation chosen for new Asparagus beds should be open to the sun, but sheltered as far as possible from westerly winds, which frequently cause much damage to the plants during the autumn. When the ground has been thoroughly prepared the surface should be left exposed to the influence of the weather until the young plants begin to grow and the shoots show through the surface of the seed bed. They should then be carefully lifted and planted with as little delay as possible. Before planting takes place the surface of the bed should be lightly forked over and a stout stick driven into the corners of each bed, from which a line should be stretched in order to mark out the alley. If the land is light and porous 2 inches of the surface soil may be taken from the bed and placed on the alley until required for covering the roots as they are placed in position. If the soil be heavy, very little should be removed from the surface of the beds, and that for covering the plants may be taken from the alleys, which will leave the surface of the bed slightly above the ground level. If it is desired to raise plants for future use, the seeds may be sown thinly in drills, which should be at least 18 inches apart and 2 inches deep. The ground for this purpose should be light and rich, and when the young plants are large enough they may be thinned to 6 inches apart.

POTATOS IN PITS.—Plantings made in January should now be ready for earthing up. Examine the bed, and if necessary give a good application of soft water before earthing up the plants. This should be done by adding a quantity of light, rich soil to the surface of the bed, in preference to disturbing that in which the crop is planted. Careful attention is necessary in order that the crop may not suffer for want of air, which should be freely admitted in mild weather, and as the season advances liberal supplies of water will be necessary in order to keep the plants growing freely. If pits are available, another planting should be made to produce young tubers in May. If the sets in trays have become well advanced great care should be exercised in planting, so that the young shoots may not be injured. Tubers intended for planting in the open should be placed in trays or on shelves, where sufficient air can be admitted to keep the shoots short and sturdy.

BROAD BEANS.—A good sowing of Broad Beans should now be made to follow those put in early in the year. A good rich soil, which has been manured in the autumn will be suitable. Plant in double rows, allowing a space of 4 feet between each set of rows. Cauliflower plants which have been wintered in cold pits should be freely ventilated in order to keep them from becoming soft and spindly. If the pots are well filled with roots, weak liquid manure should be applied twice a week. Soot water may also be applied with advantage. The aim should be to keep these plants stocky, without allowing them to become hard and stunted, or premature buttoning will be the result. Seedling Cauliflower plants in boxes should be pricked off as soon as possible and placed near the glass in a cool pit. A temperature of 50° may be allowed until the plants become established.

SMALL SEEDS.—Now that the weather has improved the final preparation of the ground for small seeds should be pushed forward as quickly as possible. All ground dug in the autumn will require pricking up with the digging fork, and should be quite dry before the drills are drawn. If not already sown, the first to claim attention should be Parsnips and Onions, but on no account should the latter be sown before the ground is dry enough to crumble when worked.

PLANTS UNDER GLASS.

By F. JENNINGS, Gardener to the DUKE OF DEVONSHIRE, Chatsworth, Derbyshire.

BRUNFELSIA EXIMIA AND B. UNIFLORA.—This beautiful shrub flowers to perfection in a warm conservatory, and also makes handsome plants in pots. Cuttings may be taken at this period of the year, using for the purpose young growths with a heel. Insert these into pots—either singly in a thumb, or three or four cuttings near the edge of a large (21-in.) pot. The cuttings will strike in a compost of loam, fine peat, leaf mould, and plenty of sand passed through a fine sieve. Water the cuttings as soon as they are inserted, and place in a frame or bell glass in a warm house with slight bottom heat. The cuttings will take some considerable time to make any root, but when well rooted pot singly in 2½-in. pots in compost as advised for cuttings run through a coarse sieve. When thoroughly established in this size, place them in 6-in. pots, when they should give an abundance of beautiful violet flowers in the early spring (changing to white with age). The plants in pots should be kept in a stove or warm house until the growths are made, and then hardened off in an intermediate house, bringing them back into a stove to flower. If required for planting out in a conservatory prepare the border, take out the old soil, renew the good drainage, place some good turf, loam, or peat over the drainage, and fill up with a compost of good loam, to which should be added in equal parts peat, leaf mould, sand, and wood ashes. When thoroughly established Brunfelsias develop into fine bushes.

As Easter is approaching, preparations should be made at once to hasten the flowering period of Deutzia gracilis, which, if put into a warm house, should be in flower by that time. Solomon's Seal, taken from the open ground and potted or boxed and put into a warm house, and also Lilacs and Viburnum will be found useful. Liliums should be placed in warm houses if there is any doubt about their being in time for Easter, as they can easily be retarded a week or ten days in a cool shed or North house if out too soon. Campanula Calycanthema is most useful for the late spring or early summer. A good plan is to sow the seed in May or June in fine sifted soil with plenty of sand, and put in a box or frame. When the seedlings are large enough to handle, prick them out on a warm border or frame. The plants from seed sown in May last should now be strong and vigorous. If they are required to flower early, they should be potted and put into a warm frame or house in the autumn, but if required later they should now be lifted, potted, and placed in a cold frame or house. Gradually increase the temperature according to the growth of the flower spikes.

BEGONIA PRESIDENT CARNOT.—Cuttings of this beautiful Begonia may now be taken and inserted in thumb pots, and placed in a bottom heat, and when thoroughly rooted, potted into 5-in. pots and grown in a stove or warm pit. When thoroughly established in this pot, shift into a 24 or larger, according to the vigour of the plant, in a compost of equal parts good loam, leaf mould, and sand, with a little peat, wood ashes, and bone meal, or rotten cow manure.

THE FLOWER GARDEN.

By EDWARD HARRISS, Gardener to Lady WANTAGE, Lockinge, Berkshire.

DELPHINIUMS.—The perennial Larkspurs are among the most useful and effective of hardy plants. Like most herbaceous plants, they require a deeply cultivated, well manured soil, otherwise their flowering period will not be of long duration, especially if the season be dry. Where Delphiniums are planted in beds by themselves they should be lifted and divided every two years. The ground should then be deeply dug and well manured before replanting. Clumps planted in front of Shrubberies should be similarly dealt with—this work may be done now. Delphiniums are easily propagated by division of the roots at the present time (see p. 128), so that when disturbing large clumps they may be divided for this purpose. Seeds may also be sown now in boxes placed in cold frames, or in the open next month on well prepared ground.

PERENNIAL ASTERS.—There has been a great improvement in these of late, and so easily are the new varieties grown and propagated that it is not necessary to retain all the old kinds many of which are inferior. The starworts will thrive in almost any situation, but they are often left undisturbed too long and the real beauty of the plant is lost. The clumps should be lifted and reduced every season. The tall species are useful for planting among shrubs; and mixed borders would not be complete without them, as they come into bloom when most other hardy plants are passing out of flower. Perhaps the most effective method is to mass them in a bed by themselves. The dwarf and intermediate kinds should be intermixed with the taller varieties.

PROPAGATING BEDDING PLANTS.—This work must now be taken in hand. Cuttings of Pelargonium, Iresine, Salvia, Marguerite, Coleus Verschaffeltii, and Alternanthera will root readily on a moderately warm hot-bed. Insert the cuttings firmly in pans, or round the sides of small pots in a light, sandy soil. Water them in and keep them shaded from bright sunshine till roots are formed. Pelargoniums, which are still in the cutting boxes, must now be potted up singly and placed in a warmer house. A shelf or stage in a vinery which has just started will suit them for a few weeks. Any plants which are in small pots must be given a larger shift when necessary. If the young growths are not wanted for propagation they must be stopped to encourage a

dwarf, bushy habit. Keep the plants which are being grown for standards progressing in a warm moist atmosphere near to the glass. The variety Paul Crampel makes a handsome subject when grown in this manner. Pinch out the leading shoot when the plants have attained the desired height and rub off all growths below the head. The plants which were used for this purpose last season and were potted up in the autumn should not be hurried. A temperature of about 45° or 50° will meet their needs till they are placed outdoors. Young plants of Salvia "Glory of Zurich" which were struck from cuttings last autumn must be shifted on into larger pots when well rooted. Seedling Begonias must be pricked out into pans filled with finely sifted soil at an early stage. Dianthus, Marguerite and other seedling Carnations must also receive early attention in this matter. To obtain the best results from Carnations they should be pricked out singly into small 60-sized pots and kept growing near to the glass in a heated pit for a few weeks. East Lothian Stocks will pay for a little extra attention in these matters, and for special purposes they should be pricked out singly into small pots. Cuttings of Ageratum may be inserted, and old plants which have been in pans since the autumn must be transferred into boxes. This useful plant may also be propagated from seed.

Border Carnations.—As soon as the soil can be got into suitable condition the plants which have been wintering in cold frames may be planted out. Some attention must be paid to the ground before putting out the plants. Wood ashes, old potting soil, and soot are all suitable materials for incorporating with soil for Carnations. Some of the perpetual flowering Carnations are very suitable for bedding purposes. Plants struck last autumn for this purpose may now be placed in a cold frame. If they are in need of repotting this must be done, as it is much too early yet to plant them out. Mrs. Burnett and May Day are both suitable varieties for summer bedding.

Hollyhocks.—The plants which are wintering in pots in frames may be planted out as soon as the ground is dry enough. Should severe weather occur a few coal ashes should be placed round the collars of the plants for protection. The disease which is so prevalent amongst these plants may be checked by spraying them once or twice during the early stages of growth with Bordeaux Mixture.

Lobelia cardinalis.—These may now be taken out of the boxes and divided. Pot up each piece into small 60's, and place them back into cold frames. Seeds may be sown at the present time in a fine sandy compost. The plants from this sowing cannot be relied upon for flowering till late in the season. The best time to sow seeds of this Lobelia is in the autumn as soon as it is ripe. The plants from this sowing should be left undisturbed in the seed boxes till the spring, when they may be either potted singly in 60-sized pots or put in boxes. Such plants will flower freely this season.

Sweet Peas.—Sowings may be made out of doors when the ground is in suitable condition. On cold, heavy ground it is a good plan to cover the seeds with some dry potting soil. This little precaution will often prevent a great many of the seeds from failing. Seeds which were germinated in pots or boxes and are at present in cold frames may be planted out when the ground is suitable. In the meantime let them get thoroughly hardened by removing the lights. Small twigs must be placed to the plants to protect them from rough winds as soon as they are put out. Should birds attack the young, tender shoots a few strands of black cotton must be drawn over each row, securing it a few inches above the plants by means of short stakes. If it is intended to grow Sweet Peas in tubs the seeds must be sown in pots. The date of sowing must depend on the time it is most desirable to have them in flower.

Fuchsias.—If suitable cuttings are available they will now readily root. Insert them round the sides of small pots in sandy compost, and plunge the pots in a case on a moderately warm bed. Shade them from bright sunshine till they are rooted. If they are kept growing in a rather warm, moist atmosphere they will make nice plants by the end of May. Old plants which have been resting may be brought into a warmer house. Cut them back and top-dress or repot them, as the case demands. Water with care till roots and growth are active.

Agapanthus.—These may be examined and if water is necessary give them a good soaking. They must not be allowed to become too dry now. Clear away all dead foliage, and if they have been wintered in a frost-proof shed it will be necessary now to place them in a cool house, where the growth will not become "drawn." They may be increased now by dividing old plants up and repotting them into smaller receptacles in a rich compost.

Ripened Fruit Wood. — (See page 124) Although Mr. Small attaches no importance to either summer pruning or ripened wood in fruit culture, I fail to be convinced they are not necessary. He says summer pruning results in nothing but superfluous shoots; but his experience differs from mine, inasmuch as I have found, where summer pruning has been properly managed, instead of superfluous growths being produced the lower buds mature and eventually become fruit spurs. Mr. Small advocates lifting as being the only satisfactory remedy for unfruitful trees. I agree that it is sometimes necessary to lift young trees, and excellent results may follow; but it was not the lifting or the other reasons suggested, as far as could be ascertained, with regard to the particular tree I mentioned, but I am convinced the desired condition was brought about chiefly by the better ripening of the wood. *Owen Moring, The Old House Gardens, Freshford, Somerset.*

THE ORCHID HOUSES.

By W. H. White, Grower to Sir Trevor Lawrence, Bart., Burford, Dorking.

Disas. — Plants of the lovely terrestrial Orchid, Disa grandiflora, which began to make their growth towards the end of last year, and have continued to make slow progress throughout the winter, will now be showing increased activity. It is not good practice to place this plant in extra warmth during the winter; such treatment generally ends in failure. The cooler the plants are kept (within reasonable limits) the better, and the slower their growth throughout the winter the stronger they will grow in the spring. Those plants which were re-potted soon after their new growths appeared, and also the young tubers or offshoots which were divided to increase the stock, are now recommencing to grow. Such plants, if they have been properly attended to during the winter, will have filled their pots with roots, and it will be necessary to place them in larger sized pots. As the plants delight in abundance of water when in full growth, extra good drainage is essential, and they will root freely in the following compost:—Good fibrous yellow loam, Osmunda fibre, and sphagnum moss in equal parts. These materials should be well mixed together, and cut up rather finely, especially the Osmunda and the moss, as they will thus mix better with the loam. Add sufficient small crocks and coarse silver sand to keep the compost porous. When re-potting, do not disturb the ball of the plant or any of the roots more than can be helped; merely turn the plant out of the pot and place it in another pot a size or two larger, according to the strength of the new growths. In placing the soil around the roots, do not press it down too hard, but just sufficiently to make the plant firm. When watering, the water should pass through the whole mass as through a sieve. As soon as the potting is completed, each plant should be watered with cold rain water, thoroughly wetting the compost. When the compost becomes fairly dry it should again have a thorough watering. Whenever the weather is suitable the plants should be slightly syringed overhead several times a day, with cold rain water, and if at any time after the plants have become well rooted, the foliage should show any indication of flagging, the compost should be well soaked through by dipping the plant in water for several minutes. The plants grow best when placed in an airy position in a cool house, where they can obtain plenty of light without strong sunshine, but not elevated on shelves where they will be subjected to a dry current of air. The best plan is to stand the plants on inverted pots, on thick slate slabs, kept constantly moist. Whilst making their growths, and especially during warm weather, the young shoots are very liable to the attacks of the small red thrips peculiar to them. They must therefore be closely watched to detect the first signs of these insects, which may be destroyed by sponging frequently with some weak insecticide. Whenever it becomes necessary to fumigate the house in which they are growing with the Xl All vaporiser, it is advisable to remove the Disas to another house, as their tender leaves are liable to injury thereby, and it is advisable, before bringing the plants back again to the house, to give them a good springing with clear rain water. Other Disas which should do well under similar treatment are D. racemosa, D. tripetaloides, D. longicornu, D. pulchra, D. cornuta, and D. lacera, also the lovely hybrids, D. Veitchii, D. luna, D. Langleyense, D. Premier, and the several fine varieties of D. Diores, etc.

PLANT NOTES.

BEGONIA MANICATA.

At the time of the Begonia Conference, held at Chiswick nearly 21 years ago, this Begonia was included among the best fifty species of Begonia by Mr. Watson, of Kew, in his paper on the subject. Many Begonias have been introduced since then, and garden forms innumerable have made their appearance, but there can be no question that B. manicata of the true species is still fully entitled to the position in which it was then placed. Many would go even further, and, from a flowering point of view, include it in the first twelve. Given a warm or intermediate temperature, this species will bear during the winter a profusion of light elegant blossoms. It forms a short, very stout stem of a somewhat succulent nature, while the large, solid-looking leaves are of a smooth shining green tint. The stalks are long and conspicuous, by reason of being clothed with large scale-like hairs. The flower scape is quite erect, and reaches a height of 2 feet to 3 feet, the upper half consisting of the loosely disposed flower panicle, which branches freely and bears a great number of small but pretty pink blosoms. For grouping purposes in the early months of the year it is extremely useful, and is very pretty as a decorative flower. Some forty years ago it was extensively grown by the late Mr. Hermann Herbst, of Richmond, for the supply of cut flowers, which at that time found a ready sale in Covent Garden.

The typical Begonia manicata is a native of Mexico, and was introduced as long ago as 1842. There are two well-marked varieties of it now in cultivation—one, aureo-maculata, whose leaves have large blotches of a golden yellow tint; and a very singular form, crispa, the foliage of which is remarkably crimped and crisped. This last is more curious than beautiful.

The cultural requirements of Begonia manicata are not at all exacting, as it is of vigorous growth, and will thrive in ordinary potting compost. Insect pests, too, give no trouble. It is strictly of an evergreen nature, and must therefore be kept watered at all seasons. *W. T. Cook.*

EDGWORTHIA CHRYSANTHA.

This is an interesting and beautiful plant when in flower, and it is not by any means common. It is a deciduous shrub, growing 3ft. to 4ft. high. The flower heads appear during February and March, and these are very like the flower heads of Daphne odorata. They grow on the tips of the shoots, and are of a clear and beautiful yellow colour, very fragrant indeed, and the flowers last for some weeks in perfect condition. The plants flower with great freedom, the more shoots there are the more profusely it flowers. The plants do best and are earliest on a warm wall. We have them also on an open border; but in these conditions the flowering period is several weeks later. The plants can be propagated from cuttings, put in in the autumn, in a close, cool frame. *W. Cook.*

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the **PUBLISHER**, 41, Wellington Street, Covent Garden, W.C.

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS**, 41, Wellington Street, Covent Garden, London. *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

Special Notice to Correspondents.—*The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

Illustrations.—*The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable plants, flowers, trees, &c., but they cannot be responsible for loss or injury.*

Newspapers.—*Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see.*

APPOINTMENTS FOR MARCH.

SATURDAY, MARCH 1—
Soc. Française d'Hort. de Londres meet.

MONDAY, MARCH 3—
Roy. Inst. General Meet.

TUESDAY, MARCH 4—
Roy. Hort. Soc. Coms. meet and Special Bulb Sh. (Lecture at 3 p.m. by Mr. W. H. Divers on "The Spring Flower Garden.") Hort. Club meet. (Lecture by Mr. E. A. Bunyard on "The History and Development of Some of Our Hardy Fruits.") Scottish Hort. Assoc. meet. Nat. Amateur Gard. Assoc. meet.

WEDNESDAY, MARCH 5—
Roy. Hort. Soc. Bulb Sh. (second day).

THURSDAY, MARCH 6—
Linnean Soc. meet. Birmingham and Midland Union of Hort. Socs. Lecture in the University, Edmund Street.

FRIDAY, MARCH 7—
Roy. Inst. meet. (Lecture by Prof. the Hon. R. J. Strutt.)

MONDAY, MARCH 10—
United Hort. Ben. & Prov. Soc. meet.

TUESDAY, MARCH 11—
Roy. Inst. meet. (Lecture by Prof. H. H. Turner.)

WEDNESDAY, MARCH 12—
Clevedon & Dist. Spring Bulb Sh. N. of England Hort. Soc. Spring Sh. at Bradford. Stevenage and Dist. Hort. Mutual Improvement Soc. Sh.

THURSDAY, MARCH 13—
Torquay Spring Fl. Sh.

FRIDAY, MARCH 14—
Roy. Inst. meet. (Lecture by Mr. A. E. H. Tutton.)

TUESDAY, MARCH 18—
Roy. Hort. Soc. Coms. meet. (Lecture at 3 p.m. by Mr. R. Lloyd Praeger on "The Romance of Weeds.")

WEDNESDAY, MARCH 19—
Roy. Meteorological Soc. meet.

FRIDAY, MARCH 21—
Good Friday.

SUNDAY, MARCH 23—
Easter Day.

MONDAY, MARCH 24—
Easter Monday: Bank Holiday.

SATURDAY, MARCH 29—
Paisley Spring Fl. Sh.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich—40.7.

ACTUAL TEMPERATURES:—

LONDON.—*Wednesday, December 18* (6 P.M.) Max. 50°; Min. 44°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—*Thursday, December 19* (10 A.M.); Bar. 29.6?; Temp. 51°; *Weather*—Dull.

PROVINCES.—*Wednesday, December 18:* Max. 47° Aberdeen; Min. 44° Dumfries.

Clover Sickness.

The failure of Clover on certain lands is so notorious as to have given rise to the term, clover-sick land. For a long time it was held that such land failed to support a clover crop because some constituent essential for the nutrition of the plant was lacking from it. Of recent years, however, the mystery has been solved, and it has been shown that clover sickness is due to an attack on the plant by one of two parasites. The one is that general pest "eelworm," which destroys all manner of cultivated plants; the other is a fungus, Sclerotinia trifoliorum, which belong to a group of parasites, of well-marked, and emphatically bad, character. In either case, the gross symptoms of the disease are a wilting and yellowing of the leaves.

The Sclerotinia sickness may, however, be distinguished from the eelworm sickness. In the former, the leaves of affected plants are covered by the white threads or mycelium of the fungus; and later, the dead parts of the clover plant are studded with small black bodies known as sclerotia. These bodies, which are characteristic of the fungus-genus Sclerotinia, are remarkable in that, although they consist only of the mycelium or vegetative part of the fungus, they are very resistant to adverse conditions. They form, in fact, a resting mycelium, and in effect play the part of reproductive bodies. After a period of rest a sclerotium gives rise to a stalked structure terminating in a flat, wineglass-shaped head, on which are borne large numbers of spore-cases, each of which contains eight spores. The spores, when liberated, germinate, and infect clover and other leguminous plants.

Eelworm sickness may be distinguished by the fact that in the plants suffering from it the bases of their branches are swollen and spongy. Those swelling, if examined microscopically, are seen to contain adult eelworms and eggs. The fact that sickness may exist over a whole field has given rise to the opinion that it is due either to diseased seed or to defective soil. It is, however, due to neither of these causes. Knowledge of the actual causes has led to the discovery of means of remedying the disease. In the case of eelworm sickness, it has been found that the application of a dressing of sulphate of potash at the rate of 4 cwt. to the acre suffices to kill the eelworm. The eggs, however, are not destroyed, and hence the first dressing, which should be put on before seed is sown, must be followed by another to catch the later brood.

To deal with the Sclerotinia sickness is a more difficult matter. Where it has a good hold on a field little can be done except to replace the clover by a non-leguminous crop, and to avoid for some years growing legumes on the infected soil. Where, however, the disease is in an incipient stage, that is to say sharply localised, it may be checked by cutting the clover on the diseased patches, biding till the ground is dry, strewing litter on it, and setting the litter on fire. The sclerotia are destroyed, and the outbreak may be checked. The treatment may be supplemented by dressing the land with kainit.

The Bean Aphis.

IN the concluding part of his article on the Aphides on Mangolds and Allied Plants (Board of Agriculture *Journal*, February. 1913), Mr. F. V. Theobald makes a number of valuable observations on the methods of dealing with the "Collier" or Black Fly which attacks and does so much damage to Broad Beans. He draws attention to the fact that, so far as his personal observations go, the Aphides which settle on Broad Beans do not seem to be willing—for a time, at least—to settle on other plants. They spread, however, from one Bean plant to another, attacking the young shoots. When the Beans are destroyed, winged broods make their appearance, and the winged viviparous females fly to other Bean plants. From these facts it follows that when Aphis rumicis makes its appearance on the plants no time should be lost in nipping off and destroying the tops both of diseased and of sound Beans. By this means the nurseries constituted by the tender terminal shoots are removed and the young lice produced by the winged females are prevented from finding the only feeding grounds on which they appear to flourish.

If from neglect of the precaution just indicated the Black Fly has spread downward on the plant spraying should be practised. A cheap aphicide should be applied copiously by means of a knapsack or other sprayer. In the case of Mangolds and Beets, which are also attacked by this aphis, soft soap and quassia have been used in the proportions of 8lb. of the former and 5lb. of the latter to 100 gallons of water. By projecting the spray mixture with force it was found that not only the aphides in the young centres, but also many on the underside of the leaves were destroyed. Though remedial measures taken promptly may reduce the damage done to Broad Beans prevention is a more difficult problem. The first step towards prevention, however, must be the discovery of the life history and habits of the disease-producing agent. Recent investigations have thrown considerable light on the origin of the "Collier" blight. Thus it has been found that the Bean Aphis winters on the Spindle Tree (Euonymus europæus), and that it spreads from the latter to wild Poppies, and also, to a lesser extent, to Docks (Rumex). From its winter quarters on the Spindle Tree the Collier Aphis descends on the Poppies, multiplies thereon, and produces a race which is capable of attacking Mangolds, Beets, Broad Beans, and many other plants. Those aphides which pass from the Spindle Tree to Rumex are more restricted in their powers of attack; they may spread to and destroy Broad Beans, but do not attack other plants. Wherefore it follows that the more Docks are destroyed the less often will this blight appear; but besides the Docks, wild Poppies are sources of danger, and the difficulties of a crusade against the Poppy are by no means inconsiderable. The Spindle Tree is the initial source of danger, and although to know the source whence trouble comes is not to disarm trouble, the wise cultivator will take note of the fact, that the Spindle Tree is indirectly responsible for the black aphis blight, and where he can he will dispense with that tree, discarding it from hedgerows, and, where possible, from woodlands.

Sugar Beet.—With characteristic energy the United States Department of Agriculture is devoting itself to the investigation of the beet sugar industry. Nor will this cause surprise when it is known that the States consume more sugar than any other country in the world, although the amount of sugar consumed by individual citizens is greatest in this country. Next to Great Britain, which uses 86.3 lb. per head, stands the United States, whose citizens consume on an average 81.6 lb. Other large consumers of sugar are: Denmark (77.75 lb. per head), and Switzerland (64.10 lb.). The great sugar producing countries of Europe—which are, in order of production, Germany (2,800,000 tons), Russia (2,250,000 tons), Austria-Hungary (1,678,000 tons), and France (783,000 tons)—consume per unit of population relatively small amounts.

Bulletin No. 260, of the Bureau of Plant Industry, U.S.A., from which the foregoing figures are taken, gives an exhaustive account of the progress of sugar beet cultivation in America. Emphasis is laid, not only on the value of the crop and of its by-products, but also on the fact of the value of beet cultivation in increasing the yield from subsequent crops. This value, which accrues as the result of the thorough cultivation and manuring required by beet, is illustrated by the following figures, which summarise the results obtained on 115 American farms:—

	Before Beet.	After Beet.
Wheat (bushels)	28·8	43
Barley ,, ...	39	59
Potatoes ,, ...	152	222

The *Bulletin* advocates a large extension of the area devoted to this crop.

The Manuring of Hops.—Dr. Bernard Dyer has issued a brief but highly interesting report of the experiments carried out by Mr. Shrivell and himself on the manuring of hops. The results are rendered of great value by the fact that the experiments have been carried on continuously for 17 years.

The accompanying table summarises the effects on the yield brought about by the application of different kinds and quantities of manure.

Seventeen Years' Results.

Plot.	Annual Manuring per acre.	1911. Crop. Cwt.	1912. Crop. Cwt.	17 Years' Average, 1896-1912. Cwt.
A	Phosphates and potash..	9½	9¾	10½
B	Phosphates, potash, and 2 cwt. nitrate of soda	14	12	13¼
C	Phosphates, potash, and 4 cwt. nitrate of soda	17½	19½	15¾
D	Phosphates, potash, and 6 cwt. nitrate of soda	18	19¾	15½
E	Phosphates, potash, and 8 cwt. nitrate of soda	19	23	16¾
F	Phosphates, potash, and 10 cwt. nitrate of soda	17½	22	16½
X	Thirty loads (15 tons) London dung	17	18	15

The conclusions reached by Dr. Dyer as the results of these experiments are summarised thus:—

Even when the soil is otherwise liberally manured by autumn or winter dressings of dung, rape dust, fish guano, etc., 4 cwt. per acre of nitrate of soda applied early in the spring may be regarded as a safe and profitable dressing for hops even in a wet season; phosphates, of course, should be used liberally at the same time, and also potash salts if the land requires potash.

It should be observed, with reference to the table given above, that the yields obtained are considerably in excess of the estimated average yields published by the Board of Agriculture. These averages for 1911 and 1912 respectively were 11.36 and 11.69 cwt. per acre for Mid-Kent and 11.46 and 12.42 cwt. for the Weald of Kent. Mr. Shrivell's farm, on which the yields given in the table were obtained, lies on the borders of these two districts.

The Kent Fruit Research Station.—The site of the station for research in fruit cultivation, for which the Board of Agriculture has promised an annual grant of £500 from the Development Fund, has been selected in the parish of East Malling, near Maidstone. A sum of £2,500 is required for the purchase of land and the erection of buildings. Towards this sum the Kent County Council has promised £1,500 on the condition that the remainder is provided by the County Councils of Surrey and Sussex, or is forthcoming from some other source. The work at the station will be directed by the South-Eastern Agricultural College, Wye, and will include instruction as well as research.

Journal of the Kew Guild.—Although the *Journal* is mainly a record of the doings of the past and present members of the Kew Garden's staff it contains much that is of general interest, especially the paragraphs relating to the happenings at Kew and the letters from Kewites abroad. We learn that 3,815,427 persons visited Kew during 1912, which must be a record attendance for any garden. In April no fewer than 670,081 visitors passed through the gates, the beautiful scheme of wild gardening being doubtless the main attraction. Reference is made to the alterations in the rock garden, which have necessitated the removal of the finest specimen of Acer dasycarpum in the gardens. A new house, specially designed for the cultivation of Cattleyas has been erected in close proximity to the Orchid houses. The building has a length of 46 feet 9 inches, and a width of 20 feet. Not the least of the many attractions at Kew are the numerous exotic birds, and a very pretty plate shows a pair of young storks that were hatched in the gardens last season. The frontispiece is a portrait of Mr. William Goldring, the well-known landscape gardener, who entered Kew in 1875. One of the most interesting of the letters contributed from abroad is by Mr. H. G. Moore, Queen Victoria Park, Niagara Falls, Ontario, who writes on "Opportunities for Kew men in North America." Mr. Moore marvels "that any profesional horticulturist should hesitate to venture out here provided he has youth and health." April and May are the best months for emigrating, as then employment can be readily obtained, for good men are always in demand during those months. Head gardeners and foremen in nurseries receive from seventy-five to one hundred dollars per month. Bothies are unknown in America, but houses are frequently provided for head gardeners and foremen. A brilliantly written article by Mr. H. Williams is entitled "Work and Ways." In a contemplative manner the writer points to the distinctiveness of Kew men. "One man goes East and another goes West. We watch their progress, each in his own sphere, geographically, temperamentally, professionally. One swelters under the tropical sun, a pioneer of empire; another, in this or some other country, guides the thoughts of untold numbers of readers from an editorial chair; another, perhaps, humbly plies his calling in some remote garden in his native land." "Ubique" might well be the motto of the members of this gardeners' guild. We are pleased to learn that Mr. William Hales (1899), Curator of Chelsea Physic Garden, has been elected an Associate of the Linnean Society.

"The Botanical Magazine."—The issue for February contains illustrations and descriptions of the following plants:—

Coelogne cristata. tab 8,477.—This popular Orchid was introduced by Mr. Gibson in 1837; 19 years after it was first seen by Wallich in Khatmandu. The species first flowered in England in a collection of Mr. G. Barker, of Springfield, Birmingham, early in the year 1841. C. cristata now has many varieties, and probably the most beautiful are those known as Lemoniana, which originated in the collection of Sir Charles Lemon at Carclew, Falmouth, and alba, which first flowered with Mr. T. A. Titley, Leeds. Another desirable variety is that known as maxima, introduced by Messrs. Sander and Sons, St. Albans. The type occurs abundantly in the Eastern Himalayas, from Central Nepal eastward to Bhutan, and when in full bloom presents a wonderfully beautiful sight.

Rhododendron sublanceolatum. tab. 8,478.—The illustration of this shrub shows gorgeous reddish flowers of good size. R. sublanceolatum is very nearly allied to R. indicum, sweet, and is largely grown in Japan as the "Chinese Azalea." But it differs from R. indicum in the size of the flowers, and the form of the calyx. The figure was prepared from a plant grown in a nursery of Mr. R. C. Notcutt, at Woodbridge, who showed a plant at the Temple Show in 1911, when the R.H.S. Floral Committee granted it an Award of Merit. This plant, which bore flowers about 4 inches across, was illustrated in the *Gardeners' Chronicle*, June 3, 1911, p. 342. The leaves vary in size and shape, and the habit of the plant is somewhat coarse. At Kew the plants grown in the open are not very happy, but in sheltered spots in the southern parts of the kingdom it would probably be grown more successfully. Propagation is effected by means of cuttings of moderately firm wood, taken in late summer and placed in bottom heat.

Cytisus nigricans. tab. 8,479.—Although usually considered a Cytisus, this plant has been placed by Bentham and Hooker in the genus Lembotropis, and Dr. Briquet has transferred it to the genus Genista. The natural order Leguminosæ, contains many valuable late summer flowering shrubs, and few are more valuable than the subject of the illustration, which is in season from the end of June until August. Its tall, erect racemes, which bear a wealth of blossom, are very distinctive, and seed so freely that the stock may be easily renewed. In order that the excessive fertility may not shorten the life of the shrub most of the old racemes should be removed as soon as the flowers have passed. As the yellow flowers are borne on the current wood Cytisus nigricans may safely be pruned in spring to within an inch or two of the old wood. Like most of the order, it should be planted in a sunny position.

Heliotropium anchusæfolium. tab. 8,480.—Unlike the fragrant, common Heliotrope, this species is nearly hardy. In Miss Willmott's garden at Warley Place plants flourish freely, and it also flowers profusely at Kew, but there it requires to be protected in winter. Heliotropium anchusæfolium is a native of South-eastern Brazil, Uruguay, and Buenos Ayres. It has a great general resemblance to H. peruvianum (the sweet-scented Heliotrope), but its flowers unfortunately have no fragrance.

Agave Haynaldii. tab. 8,481.—This species is readily distinguished from the remainder of the "marginatæ" group of Littaeas, which are easily recognised by the horny border of the leaves, by its larger size. In May, 1897, Dr. H. Ross, of the Palermo Botanic Garden, sent to the late Sir Thomas Hanbury at La Mortola a plant from which the material for the illustration was taken. The plant forms a rosette of about 80 leaves, some 6 feet wide, 4 feet high. The inflorescence is a cylindrical spike, the oblong obtuse, perianth segments are yellowish, and they soon wither.

Modern Village at Ghent Exhibition.—This will be an interesting and notable feature of the exhibition, and will attract many visitors. Space is being taken up very quickly by exhibitors of agricultural machines, gardening tools, furniture, landscape gardens, etc., and those who wish to take part in this feature should write at once to the Secretary of the Section, 6, Boulevard due Jardin Zoölogique, Gand, Belgium.

Broncho Grass.—We regret that through an error on the part of the printers two names in this article on p. 121 were spelt wrongly. The genus should have been *Bromus*, not Broncus, and the authority *Desf*, not Defs.
PAR.

R.H.S. Gardens Club.—The annual meeting of the club will be held on Saturday, June 14 next. In the morning a visit will be made to Messrs. Carter's trial grounds and seed warehouses at Raynes Park, and in the afternoon to the John Innes Horticultural Institute at Merton. It is hoped that the attendance will be a large one, and that those members unable to leave on Saturday morning will join the party at Merton in the afternoon. For trains and arrangements, will all members please communicate with the secretary, Mr. R. J. Wallis, 131, Maldon Road, Colchester?

The Board of Agriculture and Fisheries desire to remind all farmers whose oats were injured last year by the attacks of the Frit fly that in order to reduce the risk of further damage by this pest the oat crop should be sown as early in the season as possible, and, unless the land is in high condition, a dressing of 1 cwt. nitrate of soda or ¾ cwt. sulphate of ammonia per acre should be given when the young crop is 4 to 5 inches high. A leaflet on the subject of this fly and also on the subject of the eelworm which causes Tulip root in oats, can be obtained on application to the secretary of the Board of Agriculture and Fisheries, 4, Whitehall Place, London, S.W.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

WHAT IS HORTICULTURE?—The leading article the *Gardeners' Chronicle* for February 1 on the national and growing importance of horticulture has arrested my attention. The "Jackman" case, as reported in your paper on February 15, clearly demonstrates the fact that horticulture is at present lost in the term "agriculture," and only confirms what the writer of the leading article said: "Horticulture is an industry of independent rank and of first importance; it is destined to take yet higher rank, and to vie in importance with, and ultimately to surpass, agriculture, and therefore the interests of, and problems appertaining to, Horticulture, must not be so merged with those of the sister industry as to lose their proper individuality." In the Act of Parliament dealing with Undeveloped Land Duty, "agriculture" includes "orchards, market gardens, nursery grounds and allotments." Evidently we *are* merged with a vengeance in "agriculture"! And yet, on the other hand, we are rapidly approaching a time when "facts" must be faced. Consider what these facts are:—(1) We have a Department of Horticulture at the Board of Agriculture. Now what is the use of having such a department unless "horticulture" is defined? The only definition I have at present struck is that agriculture concerns "animals and plants grown for animals," while Horticulture concerns "plants" (pests, of course, included)—forestry limiting the field of operations in a common-sense way. Horticulture would thus include willows and landscape gardening, but not "woods and forests." Unless some such definition be decided upon, what is to be the work of the Department of Horticulture? Has it been formed to "keep us quiet" and "save the face" of agriculturists, who, without committing themselves, are being forced to acknowledge the existence of a rival, if not, indeed, a disinherited sister? (2) There is the problem of "small holdings," and ther eis also the attempt to copy "French gardening" in England. What is the significance of these two movements? Surely that the land must be cultivated more intensively. Apart altogether from the contemptible habit of always viewing things on strictly party lines, one cannot shut one's eyes to the fact that Horticulture, *i.e.*, intensive culture of the land, is encroaching on the fields of agriculturists and has reached, as the writer said, a position of independent rank and first importance. Small holdings run on agricultural lines we know cannot pay, unless circumstances are exceptional, and the only hope for the small holder is to be an intensive cultivator of the land, *i.e.*, an horticulturist. (3) We are about to have a National Diploma of Horticulture—the result of patient and silent work done by the Royal Horticultural Society in conjunction with the Board of Agriculture, and this Diploma should serve to bring about the defining of Horticulture. (4) Further, without desiring to enter the political arena, and apart altogether from all party cries, we must face the question of foreign supplies competing with the products of our market gardeners and others. The problem of Tariff Reform concerns us; the regulation of supplies is an important question; Land Reform, Housing Reform and Garden Cities all touch the gardener and the horticulturist. In fact, as was fitly pointed out in the leading article of February 1, as in Holland, Belgium, Denmark and France, Horticulture bids fair to surpass agriculture. The meaning of the ever onward advance of Horticulture must be recognised. I have not touched yet upon Horticulture as perhaps already having as much "money" at stake as agriculture. The wages paid to thousands of gardeners in municipal, public and private establishments, some of which are not only the pride and glory of England but the envy of foreigners and of our cousins across the pond; the money spent in orchids, rock gardening, herbaceous borders, landscape gardening; the money invested in glasshouses, fruit and rhubarb plantations, nurseries and market gardens generally; all this hard cash amounts to more than we can estimate at present. There are also acres of land cultivated for seed-raising purposes, and there are the sundriesmen, horticultural builders, manure merchants, etc. And lastly, there are the myriad gardens and allotments, increasing by acres and acres yearly, of ordinary householders throughout the land which in no sense of the word, notwithstanding Acts of Parliament, can be termed agricultural land. No wonder then the R.H.S. has brought into existence a Parliamentary Committee to watch over the interests of horticulturists. And on a par with this we have a Central Chamber of Horticulture feeling its way into existence. We have not considered "gardening" as a national asset from the point of view of health or recreation—an important and valuable asset. In conclusion we may be allowed to point out that in the recently issued Report on the Distribution of Grants for Agricultural Education and Research the agriculturist evidently gets the bigger bite of such "charitable doles"—for they are not yet true grants—as our Governments grudgingly distribute to the tiller of the soil. An analysis of the work reported upon only confirms my opinion that the writer of the leading article is right, and that the sooner Horticulture is defined the better for all concerned. *Then*, perhaps, with a little coaching auditors will be able to give us some idea of how little public money Horticulture actually receives. *J. Bernard Hall.*



Photograph by R. A. Malby, M.R.P.S.

FIG. 62. ACANTHOLIMON VENUSTUM IN JAYSINIA BOTANIC GARDEN.

RHODODENDRON DAURICUM (see p. 51).—In these gardens there is a specimen of R. dauricum over 8 feet high, which throughout February of last year was covered with blossom. Owing to the very severe winter this year it is only now coming into flower. Although it is very cold here, the plant, which is unprotected, does not suffer. This specimen, which I found here when I took charge two years ago, is a fine bushy example, and I have successfully layered several branches. *Hector Fraser, The Gardens, Drumpellier, Coatbridge, Scotland.*

A CORRECTION AS TO PREMATURE BLOSSOMING.—I find that the report of my carter that the last year by the attacks of the Frit fly that in had seen a Morello Cherry in blossom was an error arising from his calling a Myrobolan "Morella." *A Southern Grower.*

FLOWERS IN BLOSSOM.—As an instance of the mildness of the season. Wallflowers, some of the plants a few years old, are in flower, and have been more or less through the winter. The White Rock was in full flower a fortnight ago. The Primroses and Chionodoxa Luciliæ are well advanced, so are Crocus. The rush-like growth of Jasminum nudiflorum was only destitute of flowers for a month before Christmas and a fortnight after. Cydonia japonica and Daphne Mezereum will soon look very pretty, whilst Snowdrops are fading fast. Rose shoots are 3 inches long. I saw a grass plot the other week covered with daisies, and flowers might be picked any day during the winter except when covered with snow. Pear buds have shed their winter scales, and in many instances the individual flowers are visible. *W. P. R. Holywell.*

THE R.H.S. SPRING SHOW.—References have recently appeared in the Press indicating the disappointment felt in the City that the Royal Horticultral Society's "Great Spring Show," or, as it is better known in the City, the "Temple Show," is no longer to be held at the Temple, but in the Royal Hospital Gardens, Chelsea, where it will occur for the first time on May 20 to 22 next. The Council fully appreciate thi sdisappointment, and sympathise with it; nor was it without long and careful consideration that they could bring themselves to consent to the change. As pointed out in their Annual Report, "The Society has received much kindness from the Master and Benchers in being allowed for so long a time to make use of their gardens, but for several years past the feelings of attachment to the Temple Garden and dislike of the overcrowding have been struggling together for the mastery. . . . The Council have unavoidably come to the conclusion that it is their bounden duty in the interest of the vast majority of Fellows to move the Show in future to Chelsea, which affords a space nearly three times as large as the Temple." The change having thus not been sought by us (far from it) but forced upon us by the intolerable crowding, the Council of the Society hope that all fair-minded men in the City will fall in with the inevitable and unavoidable change which, after all, is only an outward expression of the splendid work being done by the Society and of its progress. Even at this early date we can promise a Show which will far exceed any of the Society's previous Shows, and repay even busy City men for the very few additional minutes taken by the journey to Chelsea. The Council have also, in response to the suggestion of a City banker, decided to keep their fortnightly Shows at Vincent Square open one hour later than hitherto, thus clearly showing that they are by no means unmindful of the interest of those of their Fellows whose daily work lies in the City. The alteration cannot, unfortunately, be brought into action this year as all notices, etc., have some time since been printed and circulated, but it is ordered to begin in January of next year. *W. Wilks.*

ORCHID NOTES AND GLEANINGS.

CHYSIS.

These epiphytal deciduous Orchids, which take a decided rest after their growths are completed, will now recommence to grow, and must therefore be kept no longer under he resting treatment. The species include C. aurea, C. himminghii, C. lævis, and C. bractescens; there are also the handsome hybrids, C. Sedenii and C. Chelsonii. The flowers which are carried on short racemes, push up concurrently with the young breaks, and should therefore not be disturbed at the roots by repotting or basketing till after the flowers have faded. Keep the plants suspended well up to the roof-glass of the Cattleya house, so as to get plenty of light and air. If the plants are strong enough to flower they should be only sparingly supplied with water, but immediately the spikes appear the quantity of water may be considerably increased. Small growing or young propagated plants will require generous treatment in every respect. Examine the young growths every day for small yellow thrips, for if these once obtain a footing low down in the growths success is hopeless. Whether thrips be present or not it is good practice to frequently remove the plants to any house that is being vaporised. Immediately the flowers fade the young growths commence to emit new roots, and this is the best time to afford more root-space to those that require it. Chysis may be cultivated either in pots, teak-wood baskets, or upon rafts, the latter being suspended perpendicularly at one end of the house abutting the partition, where it will take up but little room. The ordinary flower-pot with suitable wire handles attached are very suitable receptacles, afford ample and perfect drainage, and a rooting medium of Osmunda fibre and sphagnum moss. It is always advisable to reduce the number of back pseudo bulbs, therefore make an incision halfway through the rhizome between the second and third bulbs, and when the plant has done flowering the rhizome may be cut through, and at potting time the back part of the plant may be removed and repotted separately.

DENDROBIUM CYBELE ALBUM.

The original coloured variety of Dendrobium Cybele was raised by Messrs. Jas. Veitch and Sons, Chelsea, between typical D. Findlayanum and D. nobile. It flowered in the end of 1887, and was described in the *Gardeners' Chronicle*.

Flowers of a white form raised between D. Findlayanum album and D. nobile virginale are sent by Mr. F. Puddle, Scampston Hall Gardens, Rillington, York, who states that all the plants of the small batch have flowered and proved white. The flowers are on pedicels two inches long, and are each four inches across, and well shaped, white with a Cowslip yellow disk to the lip. There is the faintest suggestion of colour in some parts, but the closese scrutiny discloses nothing to forbid its being considered a good white flower, excellent as cut flowers and for decorative purposes.

ODONTOGLOSSUM PULCHELLUM MAJUS.

The true old form of this pretty winter and spring-flowering species, which has been in Mrs. Blackwell's gardens, The Cedars, Harrow Weald (gardener, Mr. J. Dinsmore), for a considerable time, has borne many fine spikes of its wax-like white flowers for some weeks past, and are still very effective arranged with good forms of Lycaste Skinneri, Cœlogyne cristata, and Cypripedium villosum (one plant of which has fourteen flowers) and some Dendrobiums.

The species was introduced by Mr. G. Ure Skinner from Guatemala, and it flowered with Mr. Bateman at Knypersley, Cheshire, in 1840. Since that, the best form has been introduced occasionally, but the smaller-flowered kind known as Egertonii is far more plentiful in gardens. It thrives best in the cool end of the intermediate house.

ORCHID AWARDS.

The original list of awards, with dates and indications of those of which pictures of the plants are in the society's collection, covering the years 1859 to 1909, is well known to orchidists, and should be in the possession of all interested. We have received the new issue, the commencement of the second volume, which completes the records up to the end of 1912.

Both the original issue and the second volume are to be had at the offices of the Royal Horticultural Society, Vincent Square, Westminster, the former at 5s. and the new list of 2s. 6d.

JAYSINIA BOTANIC GARDEN.

(*Concluded from page* 122).

The garden, which took three years to complete, was commenced in 1903, and opened to the public in September, 1906. To give some idea of the undertaking it may be mentioned that so many as 200 men were employed and that 6,000 lbs. of gunpowder were used to remove the rocks, so that the main road, waterfalls, paths, pools, &c., could be constructed. The result is an ideal Alpine garden, that is worth going a long way to see.

Despite the fact that the geographical arrangement of the garden does not lend itself to the cultivation of numerous species, which require different modes of culture and conditions, the garden contains many rare plants, which grow luxuriantly. At the time of my visit, early in July, many plants had finished flowering, but evidence remained in the form of old flower-heads and fruits, which gave some idea of what they were when in bloom. The garden has a southern aspect, but suitable places have been made for various plants by careful arrangement of rocks and shrubs. Bog and moisture-loving plants find a congenial home on the borders of the small pools made in different parts of the garden. In sunny pockets and rocky ledges, such plants as the various Dianthus species, Androsaces, Acantholimon (A. venustum, fig. 62), being specially fine), Æthionemas, Artemisias, with their silvery foliage, and many others are well represented, while the many Campanulas are to be found in suitable positions.

Daphne Blagayana does well here, and I noted a magnificent specimen, 5 feet across, which had been full of flower. Azalea procumbens was making quite a carpet of bronzy-green foliage, while the Alpine Sea Holly (Eryngium alpinum), (fig. 63) in groups was very attractive.



Photograph by R. A. Malby, F.R.P.S.

Fig. 63. ERYNGIUM ALPINUMIN, JAYSINIA BOTANIC GARDEN.

A bush of Genista horrida (fig. 64), very dwarf, just over a foot in height, wth spiny branches, bore a mass of pale-yellow flowers. In made-up beds in shady corners, and in the short grass, Primulas of various kinds, Gentians, Soldanellas, and numerous kindred plants were quite at home, while the members of the Saxifraga family were accommodated in suitable positions according to their requirements.

Most of the Swiss Alpine plants were collected in their native habitats by Mr. Frank, the director of the garden, and established in their new home; and as, at this elevation, they get their usual covering of snow during the winter months, they do not suffer from the change like

plants cultivated lower down, where they are subject to alternations of close, damp weather, and cold, drying winds.

Whilst no expense has been spared in the formation of the garden itself, certain necessary adjuncts thereto have not yet been provided, although they may be contemplated in the near future. A good library containing works of reference and floras of the various mountain and temperate regions would be most valuable, whilst an herbarium with dried specimens of typical species is equally necessary for the correct nomenclature of plants in the garden. For the purpose of extending the present collection it would be a great advantage to issue a yearly list of seeds for exchange with other botanic gardens. *W. I.*



Photograph by R. A. Malby, F.R.H.S.

FIG. 64.—GENISTA HORRIDA GROWING IN JAYSINIA BOTANIC GARDEN.

THE SOUTH AFRICAN COMBRETACEÆ.

(*Continued from p.* 117.)

6.—COMBRETUM PRETORIENSE,* *Dümmer*, sp. nov.

A scandent (?) shrub or small tree; second year's branchlets greyish, terete, prominently noded, the bark exfoliating in thin longitudinal plates, glabrescent or puberulous; twigs short and with the young leaves and inflorescence covered with a dense rusty velvety down; internodes 1 to 2 cm. long; leaves opposite, subopposite (or rarely alternate or ternate), deciduous; petiole subterete, densely puberulous, 5 to 10 mm. long; leaf-blade (mature) broadly oblong or broadly obovate, rounded or rarely apiculate, rounded at the base, 5 to 10.5 cm. long, 3 to 5.5 cm. broad, thickly coriaceous, glabrous, faintly lepidote above and below except for the puberulous midrib, which is most prominent on the lower surface, having 8 to 10 pairs of principal lateral veins, which coalesce towards the margin and form a subintramarginal sinuate band; margin slightly irregular and undulate. Spikes narrowly cylindric, 3.5 cm. long, averaging 1.3 cm. broad; bracts minute, deciduous. Receptacle 5 to 5.5 mm. long, its lower part narrowly ovoid, lepidote, and puberulous, its upper infundobuliform-campanulate, externally thickly lepidote, 3 to 4 mm. diameter; disk plate-like, with a villous margin; calyx-segments deltoid, acute. Petals clawed, not exceeding 2 mm. long, whitish, glabrous, the limb almost reniform, 2 mm. broad. Stamens, 3 to 4 mm. long, glabrous. Style filiform, 6 mm. long, glabrous; stigma truncate. Fruit almost quadrate, broadly four-winged, large, truncate or obliquely emarginate at the apex, truncate or emarginate at the base, 3.8 to 4.5 cm. long, 3.5 to 4.8 cm. broad, chestnut brown, glabrous and faintly lepidote, the wings 16 mm. broad, and prominently striate.

Kalahari Region.—Transvaal, hills near Pretoria, 1290 m., Oct., 1886, Bolus in *Herb. Kew*, 7766.

In its young parts this species exhibits a great similarity to both C. Zeyheri and C. holosericeum, under which latter name the specimens under consideration were distributed, but the almost glabrous leaves, larger and glabrous fruit distinguish it from the latter species, while the absence of axil-tufts and differences in the floral structure, as well as narrower brownish fruit, easily separate it from C. holosericeum. Whether a flowering specimen, gathered by Mr. Burtt-Davy (No. 2100) at Nylstroom in the Transvaal in November, 1903, is a form of this, subsequent leafy and fruity specimens must decide, but the floral characters certainly suggest its distinctness.

7.—C. ERYTHROPHYLLUM, *Burchell*, ex Sonder and Harvey, *Fl. Cap.*, ii, 509 (1862), (*not* Sonder in *Linnæ*, xxiii., 43, 1850).

A large tree of picturesque growth attaining a height of 15 m. and a trunk-girth of 0.7 m.; bark smooth, white or pale greenish; branches spreading and crooked. Second and third year's growth teretish, brownish and glabrous, the ultimate twigs opposite, slightly angled, foxy pubescent, 2 to 7 cm. long. Leaves opposite, subopposite or alternate (rarely ternate), usually twice as long as the internodes and borne on short pubescent petioles, 1 to 3 mm. long; blade oblong or broadly elliptic (rarely obovate); acute or obtuse, narrowing from the middle to the base, 3 to 7 cm. long, 1.3 to 3 cm. broad, thin in texture, green and glabrous above at maturity, much paler and inconspicuously lepidote beneath, with rusty axil-tufts, the midrib and lateral veins raised and very sparsely pubescent, margin scarcely wavy. Spikes solitary in the axils of the leaves of the short lateral shoots, shortly cylindric, hemispheric or globose, 1 to 2 cm. long; peduncles 0.5 to 1 cm. long, rufo-pubescent, but occasionally slightly longer (2 cm.); bracts oblong-ovate, and exceeding the lower part of the receptacle. Flowers yellowish or greenish. Receptacle 5.5 mm. long, sparingly or thickly pilose, especially its lower narrowly ellipsoid portion, the upper broadly campanulate, 2.5 to 3.5 mm. in diameter; disk plate-like, with a pilose margin; calyx-segments triangular, acuminate. Petals spathulate, obtuse, 1.5 mm. long, 5 mm. broad, the limb obovate and slightly emarginate, sparingly ciliolate. Stamens glabrous, 5 mm. long. Style stout, glabrous; stigma obtuse, truncate or emarginate. Fruit elliptic, with an emarginate apex and obtuse base, crowned by the remains of the persistent style, 1.5 cm. long, 1 cm. broad, its body pubescent; pedicel 5 to 8 mm. long.

Engler and Diels in Engler's *Mon. Afrik. Pfl.* iii. 26, t. vii. f.D. (1899). Sim, *Forest Fl. Cape Colony*, 222, t. 69. f. ii (1907). Burtt-Davy in *Transvaal Agric. Jour.*, v. (1906-07), 424. Terminalia erythrophylla, Burchell. *Travels South Africa*, i, 400 (1822), *D.C. Prod* iii. 13. (1828).

Kalahari Region.—Griqualand West, Herbert Div., right bank of the Vaal River at Blaauwbosch Drift, Oct. 28, 1811. Burchell, 1749. Transvaal; at the foot of the Magaliesbergen, near Rustenburg, Sept 1874. Roe ex *Herb. Bolus*, 5641. On the banks of the Vaal River, near Pniel, Oct., Roe ex *Herb. Bolus*, 2071. Engler and Diels cite also specimens gathered by Marloth (Nr. 812) at the Vaal River, and in the same region at Smith's Drift by Schenk (No. 694). The two latter represent fruiting material; otherwise that at Kew is in the flowering stage.

VAR. OBSCURUM, *Huerck* and *Muell-Arg.* in *Huerck Obs. Bot.* ii., 237 (1871).

Leaves relatively longer, narrower, more acuminate and coriaceous than in the type, up to 10 cm. long and 3 cm. broad, with obsolete axil-tufts and more diffused pubescence on the lower surface; calyx-segments broadly triangular and obtuse. Fruit orbicular or broadly elliptic, 1.5 to 2 cm. diameter, emarginate at apex and base, crowned by the base of the persistent style, its body sparingly lepidote and pubescent, the wings 6 to 7 mm. broad.

Compretum erythrophyllum, Sonder in *Linnæa*, xxiii., 48 (1850). Wood in *Trans.* S.A. Phil. Soc. S. Africa, xviii, ii, 156 (1908). C. riparium Sonder in *Linnæa*, xxiii., 47 (1850). *Flora Capensis*, ii, 511 (1862). Wood, l. c., 156. var. intermedium, C. Kuntze, *Rev. Gen. Pl.*, iii, ii. 87 (1893). C. Sonderi, Gerrard ex Sonder in *Fl. Cap.*, ii, 511. Wood, l.c., 156. C. glomeruliflorum, Sonder in *Linnæa*, xxiii. 42 (1850). *Fl. Cap.*, ii, 509. Engler and Diels, l.c., 26, t. vii f.B. Wood, l.c., 156. C. lydenburgianum, Engler and Diels, l.c. 26, t. 7, f.C. Burtt-Davy, l.c., 424.

Kalahari Region.—Transvaal, Magaliesberg, May and June, Burke (fruiting spec.). In woods at the Crocodile River. Zeyher, 550, 549 (flow. spec.). Aug., Burke, 352 (flow. spec.). Pretoria, Rehmann, 4710 (immature fruit spec.). On the mountains about Rustenberg, 1200 m., March, McLea in *Herb. Bolus*, 5644 (fruiting spec.). Beside the stream, bottom of Rimer's Creek, Barberton, 840 m., Sept., 1889, Galpin, 558 (fruit and flow. spec.). At Pretoria, Dec., 1883, Wilms, 1826 (immature fruit spec.). Near the town, Lydenburg, Nov., 1884, Oct., 1895 and 1887. Wilms, 212, 214, 216, 215 (flow. spec.). Engler and Diels also quote Rehmann, 4710 from Pretoria; Rehmann, 4566, 4569 from Wonderboom Poort, and a sterile narrow-leaved form from the Elands River, Rehmann, 4941.

Eastern Region.—Griqualand East, on the banks of the Umzimkulu, near Clydesdale, 750 m., Sept., 1882, Tyson, 1066 (flow. and fruit spec.). Natal, Gerrard, 138 (this flowering specimen has very dense and softly-pubescent leaves, while the peduncles are relatively longer—3 cm. long; it constitutes, however, an extreme form of the variety, in my estimation. Gerrard, 1132 (immature fruit spec.). Near Port Natal, Sutherland (flow. spec.). Gueinzius (flow spec.). Banks of the Klip River, near Ladysmith, 930-1200 m., Feb., 1895, Wood, 5713 (fruit spec.). Inanda, Umzinyati Falls, Sept., Wood, 1038 (flow. spec.). Also Rehmann, 7529 and 7544 from Pietermaritzburg, and Gueinzius, 62 and 565 from Port Natal, according to Engler and Diels.

(*To be continued.*)

* C. holosericeo. Sonder affine, foliis apice rotundatis costis exceptis glabris, fructibus majoribus utrinque truncatis emarginatisse glaberrimis distat.

PUBLICATIONS RECEIVED.—***The Fruit Growers' Year Book and Market Gardeners' Guide, 1913.*** (London: The Cable Printing and Publishing Co., Ltd.) Price 1s. net.—***The Virgin's Bower,*** by William Robinson. (London: John Murray). Price 3s. 6d.—***Amateur Gardening Annual and Year Book, 1913.*** The Year's Work in the Garden. Price 1s. net.—***The Florist's Bibliography,*** by C. Harman Payne. (London: William Wesley & Son). Price 1s.—***The Potamogetons (Pond Weeds) of the British Isles,*** by Alfred Fryer, and A. H. Evans, illustrated by Robert Morgan. (London: Lovell, Reeve & Co., Ltd.). Price, uncoloured, 15s.; coloured, 21s. net.

FORESTRY.

PRICES OF HOME-GROWN TIMBER.

Though prices have advanced but little during the past twelve months yet demand for timber of good quality has been unusually keen, and large quantities have changed hands at distinctly remunerative prices. Around London, sales have been well attended, and good Oak, Ash, Larch and Sycamore have realised a quick market, while the price, generally speaking, may be said to have been a shade higher than that of the previous twelve months. For boat and barge building and repairing on the Thames some very choice logs of Oak have been delivered, chiefly from Sussex, Surrey and the adjoining counties, the price being higher than that generally received for the same class of timber when offered by public sale. Prices of Oak vary a good deal, but Oak of first quality and large size usually finds a ready market at from 1s. 6d. to 2s. 3d. per cubic foot, special trees bringing from 3d. to 6d. per foot more, especially if they come from estates where the reputation of the timber is acknowledged. Ash timber is greatly in request; indeed, the supply cannot meet the demand—that is for first-class trees that are produced in close woodlands. There is a fair sprinkling of big, rough Ash timber from field and hedgerow, but this is not what is required, the smooth-barked, supple, young trees of from 40 to 50 years' growth and plantation-grown being mainly in demand. The price of such timber is from 1s. 6d. to 1s. 8d. per cubic foot, but a large lot of prime Ash was sold last week in Northamptonshire at 2s. 3d. per cubic foot, and a smaller amount in Kent at 2s. per foot in the woodland.

Elm, even of the best quality, does not find a ready market at anything like remunerative prices, and plenty can be bought at from 6d. to 1s. per cubic foot, that of exceptional quality and size fetching a few pence more. Here, again, it is not the big, rough and often hollow-stemmed trees from field and hedgerow that are required, but the clean and almost branchless trunks that are most often produced in close woodland. Not so long ago Elm coffin-boards were in demand in all our larger centres of industry, but of late years foreign competition has so reduced the price of this wood that it is now almost a drug on the market, and the coffins are sent in at a cheaper rate than they can be manufactured here, even with the most up-to-date London machinery.

Beech timber from well-known districts, such as the Chiltern Hills, the Chenies and other parts of Herts, finds a ready market at good prices. Indeed, when this timber is grown on chalk there is little difficulty in disposing of large quantities at quite remunerative prices. As much as 1s. 7d. per foot cube has been paid for special logs, but the average selling price would be about 1s. per foot, though in parts of the country as low as 7d. is considered a fair return for Beech timber. The demand for big, sound Sycamore trees is always good, but much of this timber placed on the market is from farm and park, and consequently rough, and hardly up to the mark for the more important purposes to which the wood is applied. The price varies greatly, from 10d. to 2s. 6d. per foot, the latter price having been obtained for a large number of excellent trees on an estate in Wales. Several of the trees contained 60 cubic feet of wood, they were of remarkably clean growth, and the price was for the trees as felled in the woodlands. Large quantities of fresh-felled young Sycamore are used in the making of brush handles, spoons, and toys, but the price is rarely much over 1s. per foot. Birch and Alder have a ready market in certain parts of the country, the price varying from 7d. to 10d per foot. In the environs of large manufacturing towns clogs as footwear are much in request, and the Alder and Birch are mainly used in the making of the soles. Willow timber, if suitable for the manufacture of cricket bats, finds a ready market, both in this country and abroad, the price varying from 3s. 6d. to 10s. per cubic foot. A large quantity has been sent from Norfolk to an Australian firm, the timber being cut into suitable lengths for cricket bats and partially seasoned before shipment. Timber of the "maiden" or unpollarded Willow is most valuable, and the white or Huntingdon species (Salix alba) is preferred to any other. Poplar is plentiful, and sells in some parts of the country at from 8d. to 11d. per foot; but the demand is irregular, and local requirements often enhance the price. The timber of the sweet or Spanish Chestnut is often substituted for Oak in park fencing, and when properly matured and seasoned it lasts nearly as well as the latter. The selling price varies with the particular part of the country from 10d. to 1s. 3d. per cubic foot. For special trees the latter price is sometimes exceeded, but unfortunately the timber is often rendered almost useless by "cup" shape, which separates the layers of wood and renders it quite useless for constructional purposes. Horse Chestnut timber is not much sought after, and the price is usually low, say, from 6d. to 8d. per cubic foot. It is used for turnery purposes and the backs of brushes. Lime timber has a special market when of suitable size and quality for the making of sounding boards for musical instruments, and sells at all prices up to 1s. 4d. per foot. Hornbeam, suitable for skittle pins and machine rollers, if procurable in quantity, finds a good market. Of other hard-wooded trees the timber of the Walnut, Yew, Holly and Gean or wild Cherry, are sometimes in demand, but the supply being small and irregular, fixed prices can hardly be stated. For a number of large Walnut trees 3s. 6d. per cubic foot was lately obtained, but single specimens are usually difficult to get rid of. There is a demand at present for Yew timber of fair size, and good prices are obtainable, while smaller, for rustic work, is occasionally asked for. Amongst coniferous timbers the Larch holds first place, and prices vary from 8d. to 1s. 3d. per foot, or even more. The demand for first-class Larch timber is far greater than the supply, and is likely to remain so for some years. Scotch Pine timber is plentiful, and the price in most districts low. In some parts of Scotland and Ireland the wood can be got at a few pence per foot, while in noted districts of England, such as Woburn in Bedfordshire, from 8d. to 10d. is the selling price. Silver Fir timber is hard to get rid of, and is frequently sold at a few pence per foot—firewood price.

The market for firewood has improved of late, and the bundles of fire-lighters are now either of smaller dimensions or at an enhanced price per 100. Rough firewood from the woodlands usually sells at 5s. per cart load, and small faggots for fire-lighting are delivered in the London market at about 2s. 6d. per 100.

Preferential carriage rates, aided by keen foreign competition, have greatly reduced the prices of forest produce generally, and have dealt a deathblow to many time-honoured industries of our woods and plantations. *A. D. W.*

LAW NOTE.

At the Guildford County Court, before Judge Harington, on Friday, February 14, Charles Brookson, of the Castle Nursery, Ottershaw, sued J. Glover, of Sutton Hill Nursery, near Woking, for the sum of £12 for rose trees supplied. The plaintiff supplied roses to the amount of £78 11s. 8d. He had received a cheque for £66 11s. 8d., and there was a balance of £12 due. The dispute arose over the question of 288 standard roses which were returned by the defendant and placed in plaintiff's field, where they remained ever since. The plaintiff had never accepted the return, but, in order to keep them alive, he put a little earth over the roots. Directly the trees were returned the plaintiff wrote to defendant stating that he would hold them there only at defendant's risk.—Mr. Davies said the issue was that the defendant ordered 800 rose trees and 1,107 were sent. Plaintiff said defendant offered £4 a hundred for standard roses, which he (plaintiff) accepted, the number of trees being 1,107. Defendant afterwards came to fetch the roses himself and saw them placed on the van. His Honour gave judgment for the plaintiff for the amount claimed.

THE ZEPHYRANTHES.

To the Zephyranthes Herbert applied the poetical title of "Flower of the West Wind"—the wind that takes its name from Zephyrus, the mythological god of the soft breeze which blew from the sunset over the fabled Hesperides—the Fortunate Islands—that dreamed ever in the golden track of the sinking sun, just beneath the western horizon, heralding the spring and the breaking into life of all vegetation. The Anemone or Windflower, beautiful though it is, has not the advantage of the Zephyranthes, for it is dedicated to every wind that blows, rude Boreas and Eurus, the north and the east winds, as well as to the softer caresses of south and west.

Possessing such a gracious title as do the Zephyranthes, their flowers may naturally be expected to be dowered with a high degree of attractiveness, as, indeed, they are, being delicate in form and soft in colouring. Such species as Z. candida and Z. Atamasco may well be grown in the open in warm borders, but the other species are usually seen at their best under glass. Whether grown in pots or in the open, they should be provided with a porous, gritty soil, since even those species which in their native land flourish in boggy ground fail to retain their health here if planted in retentive soil. The Zephyranthes are bulbous plants, and the majority of them are natives of the southern portions of America.

The best known species are the following:—Z. Atamasco, sometimes styled the Atamasco Lily. This is a native of the Southern United States, where it is found in low, marshy spots. Its flowers, borne on stems a foot in height, are pure white and about 4 inches across. It succeeds in the open in warm, wall-backed borders in the south-west, in porous, gritty soil which is not retentive of moisture, and is certainly the finest species for cultivation out-of-doors, a group of 20 or 30 plants in full bloom having a charming effect in August and September. There is said to be a variety of this plant which bears rosy flowers.

Z. carinata is a native of Mexico, and bears white Crocus-like blooms about half the size of those of Z. Atamasco. It has proved fairly hardy and does well in warm borders, where it is a pretty sight when bearing its white flowers above its rush-like foliage. It succeeds when planted at the edge of a narrow border in which Belladonna Lilies are grown, the flowers of the two, which expand at the same time, making a charming contrast. Where it flourishes it multiplies very rapidly, both by offsets and by self-sown seedlings.

Z. Andersonii is a small flower rather less in size than Z. candida, and is yellow, flushed with red on the exterior. It has flowered here in the open, but would probably succeed best under glass.

Z. rosea is a native of Cuba, and bears rosy flowers much resembling those of Z. carinata, but smaller. It is said to have bloomed in the open, but it is doubtful if it would ever become sufficiently at home to flower annually.

The only species that can be recommended for open-air culture in this country are Z. Atamasco and Z. candida. In warm borders in the south both of these should do well and flower freely. At Kew, Z. candida is perfectly at home, and increases rapidly. Though in their native countries they are usually found in marshy ground, here they do best in gritty, porous compost, that is not retentive of moisture. *Wyndham Fitzherbert.*

SOCIETIES.

ROYAL HORTICULTURAL SCIENTIFIC COMMITTEE.

FEBRUARY 18: *Present:* Mr. E. A. Bowles, M.A., F.L.S., F.E.S. (in the Chair); Sir J. T. D. Llewelyn, Dr. A. B. Rendle, Sir Everard im Thurn, Messrs. A. Worsley, W. Hales, G. Massee, W. E. Ledger, G. Gordon, W. Cuthbertson, and F. J. Chittenden (hon. secretary).

Abies bracteata fruits.—MR. GORDON showed fruits of Abies bracteata from the garden of R. Barclay, Esq., Bury Hill, Dorking, where it is now fruiting for the first time. The tree was planted in the early part of the second half of the last century. Abies bracteata was discovered by Douglas on the high mountains of Columbia growing at an elevation of never less than 6,000 feet. W. Lobb later obtained seeds, and the species was introduced in 1853. The tree at Bury Hill was one of the first to be planted in this country. The large cones are borne in clusters, and are easily recognised by the long, pointed, recurved bracts. In the specimens exhibited drops of resin had exuded on both the bracts and the leaves, giving the whole a very singular appearance.

Grubs on roots of Trollius, etc.—MR. BOWLES showed, from a garden in Sussex, grubs of the Ghost Moth, Hepialus humuli, which had been feeding on the roots of Trollius and Helleborus. They frequently attack Pæonies and other fleshy-rooted plants.

Smilax with curled leaves and variegation.—Specimens of Smilax were received from Guernsey with curled and variegated leaves, with a full report on experiments which had been tried with the object of eradicating the complaint. Mr. Bescoby, who has been investigating the matter, ascertained that in some of the soils where the disease occurred the amount of damage done was considerable, as much as 10 per cent. of the crop being affected. The committee were of opinion that the trouble was a physiological one, and not in any way due to the attack of any organism. The remedy, therefore, lies in the alteration of some cultural details, and the fact that the treatment of the soil with boiling water had effectively prevented its occurrence in plants subsequently growing in the soil pointed to that being a suitable method to adopt.

ROYAL METEOROLOGICAL.

THE monthly meeting of this society was held on Wednesday evening, the 19th ult., at the Surveyors' Institution, Great George Street, S.W., Mr. C. J. P. Cave, president, in the chair.

A paper on "Periodical Variations of the Velocity of the Wind at Oxford," by Mr. W. H. Robinson was read, in which he dealt with the annual and diurnal changes in the velocity of the wind as recorded at the Radcliffe Observatory during the last 50 years. The average monthly values show that there is a rapid fall in the velocity of the wind between March and June, and an equally rapid rise between September and December. The minimum is in September. There is a range in the annual variation of 3 or 4 miles per hour. On comparing the wind velocity with the mean monthly temperatures of the air, the author finds that an increase (or decrease) of one mile per hour in the velocity of the wind corresponds to a fall (or rise) in the temperature of about 8 deg. Fahr. As regards the diurnal oscillations, the wind increases its velocity with an accession of warmth, and decreases with a lowering temperature, this being the inverse of that found in the discussion of the annual variation.

A paper on the "Rate of Ascent of Pilot Balloons," by Mr. J. S. Dines, was read, in which he described some experiments which he had made in the large airship shed at the Royal Aircraft Factory, Farnborough, with a view to determining the rate of ascent of small pilot balloons of the type which he has used for the past two years in his work for the Advisory Committee for Aeronautics.

A paper on "Meteorological Conditions in a Field Crop," by Mr. W. L. Balls, the botanist to the Egyptian Department of Agriculture, was also read. He described the methods which he had adopted for ascertaining the temperature, the humidity and the force of the wind on the surface of the soil in a field of cotton at Giza. The growth of the cotton-plant in Egypt is usually completely arrested by sunshine during the greater part of the day, through the severe water-loss necessitated by thermo-regulation of the internal temperature, and growth, during most of the season, is thus confined to the hours of darkness. The usual limiting factor of this growth during the night is the temperature of the tissues—roughly, the air-temperature, with slight modification by clouds; thus, any cause making for a rise in temperature at night involves a higher growth-rate; this, in its turn, in the early part of the season at least, implies more rapid development of the flowering branches, bringing about earlier appearance and more rapid accumulation of the flowers, and hence, of the crop. It follows that the cotton-grower should rejoice in the cooling night-breeze for more than personal reasons, and the usual Egyptian paradox again makes its appearance in that the wind which cools the farmer warms the plant.

BRITISH GARDENERS' ASSOCIATION.

THE monthly meeting of the British Gardeners' Association (Edinburgh Branch) was held on Monday, February 17, 1913, Mr. W. H. Morland presiding. A paper was read by Mr. James Harris, superintendent, Demonstration Garden, Edinburgh and East of Scotland College of Agriculture, on "The Embellishment of a few of London's Public Parks and Gardens": an interesting discussion followed.

The next meeting will be on March 17 at 7.30 p.m.

EDINBURGH BOTANICAL.

THE fourth meeting for the session was held on the afternoon on February 8, SIR ARCHIBALD BUCHAN-HEPBURN, BART., President, in the chair. PROFESSOR BAYLEY BALFOUR read a paper on "The Primulas of the Candelabra Section, a series which includes many recently introduced Chinese species of great horticultural interest, such as Pulverulenta, Beesiana, Cockburniana and Bulleyana. In his account of the species of the section, Professor Bayley Balfour described two new species, both from Western China—Primula mallophylla and Primula helodoxa. About half the species of the section have purple flowers, while the other half have orange or yellow. A paper on the occurrence of Utricularia ochroleuca, and U. intermedia in Scotland was read on behalf of Mr. ARTHUR BENNETT. DR. MALCOLM WILSON showed specimens of Potato tubers attacked by Rhizoctonia violacea. The fruiting stage of the fungus Corticium vagum var. Solani occurs on the lower leaves, and in the specimens exhibited this stage existed in organic connection with the sterile mycelium on the tuber. The disease known as "little potato" is probably caused by this fungus. MR. ALEXANDER COWAN forwarded his report on the 1912 excursion of the Scottish Alpine Botanical Club to Killin and district.

Among the exhibits were:—A new lichen, Lecanora Andrewi, found in the neighbourhood of Edinburgh by Mr. James McAndrew; some new Saxifrages from the frontiers of Yunnan and Tibet, collected by Mr. F. Kingdon Ward. Among the living plants shown from the Royal Botanic Garden, the following were specially noteworthy:—

Clematis fasciculiflora, Franch.; an evergreen species, with greenish-white flowers; Rubus parvus, Buch.; a very distinct species from New Zealand, of creeping habit, with slender stems, and 1-foliolate leaves, which are of a bronzy-yellow colour on the upper surface. The fruits are said to be large and juicy. It is a good rockery plant, likely to prove hardy. Echeveria Pringlei, Rose; Senecio Burchelli, DC.; a shrubby dense foliage-plant, with bright yellow flowers, from the Cape; Omphalodes cornifolia, Lehm.; a pretty blue-flowered plant from Asia Minor, requiring a dry, sunny position. Romanzoffia Suksdorfii; in appearance somewhat resembling a compact Saxifraga, with dense green foliage, and flowers which are a very pure white.

CHESTER PAXTON.

FEBRUARY 15.—The second of a series of lectures in connection with this society was given in the Grosvenor Museum on Saturday, under the chairmanship of Mr. John Weaver, when Mr. J. D. Siddall, F.R.M.S., J.P., delivered an able discourse on "Plant Life and its Place in Nature."

The lecturer showed, by means of a diagram, the close relationship of the three kingdoms of nature—mineral, vegetable, and animal; and proceeded to explain the distinguishing characters of each, and how the plants lived upon the mineral kingdom and made therefrom the food indispensable to the life of animals. Hence the vital importance of most careful and thorough study of all the details of vegetable life. Beginning with descriptions of some of the simplest forms of living organisms, and concluding with the most highly specialised plants, the structure and functions of many typical examples were described. A series of lantern slides gave added interest to the subject.

At the close Mr. N. F. Barnes proposed a vote of thanks to Mr. Siddall, which was carried with acclamation.

SCOTLAND.

EDINBURGH NURSERYMEN, GARDENERS, AND FLORISTS ASSOCIATION.

A MEETING was held in the Lauriston Hall, Edinburgh, on February 13. It was decided to form an association to promote the interests of the nursery, garden, and florist trades of Edinburgh and neighbourhood and a committee was appointed. The question of a new rate of charges for jobbing gardeners was considered, and it is hoped that the association will give a much-needed support to the trades in defending their interests. Mr. A. Millar was in the chair, and the meeting resolved that the jobbing rates from March 31 be at the rate of eightpence per hour for the masters, and that the minimum wage for the men be sixpence per hour. The present wage for the men was stated to be 23s. 4½d. per week.

DUMFRIES AND DISTRICT HORTICULTURAL SOCIETY.

THIS title has been adopted as that of the new Dumfries and South of Scotland Horticultural Society, and at a meeting held in St. George's Hall, Dumfries, on February 17 the office-bearers and committee were appointed. These are:—President, Mr. S. Arnott, Sunnymead; vice-presidents, Mr. A. W. M'Alister, potato merchant, etc.; Mr. W. Hutchinson, Terrogles Gardens; and Mr. J. Maxwell Gray, Glebe Terrace, with Mr. J. L. Armstrong, Eastfield Road, Dumfries, as secretary and treasurer. A committee of eighteen members, representing the three sections of nursery and seedsmen, gardeners, and amateurs, in equal numbers, was also appointed. The schedule of the show, which will be held this autumn, is in course of preparation.

THOMAS EDWARD MEMORIAL.

A HANDSOME granite monument to the late Thomas Edward, the northern naturalist, which has been provided by subscription, is to be erected at Banff shortly. It bears the inscription: "Thomas Edward, Associate of the Linnean Society; 25th December, 1814; 27th April, 1886. Sophia Reid, his wife; 22nd December, 1815; 6th December, 1890." The following line appears on the upper portion of the monument: "And Nature was to him an open book."

THE FORMATION OF FEDERAL SOCIETIES.

THE growing tendency to form a federal system of Horticultural Societies—of which the Dumfries and District Society is an example—is a sign of the present healthy state of Horticulture. Such federal societies will, without doubt, play an important part not only in fostering a love for gardening in their several districts, but also in bringing to the notice of the Governmental authorities the ways in which Horticulture may best be aided by the State. The gardeners' profession is perforce a lonely one, and gardeners are compelled often to live in isolated regions. To break down that isolation and to promote a spirit of fellowship among the gardeners of a district is in itself an admirable work, and one which local societies linked with Federal Societies can do much to achieve.

BATTY LANGLEY AS A GARDENER.

Horace Walpole, who for a brief period was a near neighbour of Batty Langley at Twickenham, describes him as a "barbarous architect—who endeavoured to adapt Gothic architecture to Roman measures." But he was not simply a "barbarous architect," for he designates himself "a gardener," and appended "hortulanus et architectus" to his signature. It is in the capacity of gardener that he claims our notice. There was a Langley a gardener in the 17th century, and Batty Langley was born in 1696, but of the relationship of the two, or, if any relationship existed, I do not know. Certain it is he was either bred a gardener, and a skilled gardener, or else he obtained the information he communicated in his books from someone who was no novice in the calling. Not only did he style himself a gardener, but he also offered his services as a land surveyor, an estate improver, a diallist, a water engineer, a contractor, a provider of trees and shrubs, and a landscape gardener; he also cast statues, vases, &c., in a material of which he was the inventor. He drew most of the plans which are a feature of one of his books, and all the numerous varieties of fruits which are equally a feature of another, and while of a somewhat splenetic temperament, he was not without a certain humour, as evidenced where he apologised for differing from Bradley, who was a "gentleman" and no gardener, as he admitted he himself was. The grimness of his humour was manifested in one of his later books; when annoyed because the designing of a bridge was given to a foreigner he published a design of his own, with the effigy of the unfortunate interloper hanging from one of the arches.

He gives reasons for writing his books on gardening, three in number, and two of them profusely illustrated, but when it is considered that he commenced their production in or a little previous to 1727, and wrote the preface of the last in July, 1728, and though he lived till 1751, wrote no more on this subject, we may be pardoned if we feel dissatisfied with the apparently simple reasons he gives. In addition to the subject matter of the books they contain much of interest regarding the management of gardens, cost of labour, bestial, as well as human; wages running from 1s. to 1s. 6d. per diem; those of head gardeners from £8 to £20 a year. It was not unusual in large gardens to contract for the labour and their upkeep with an "undertaker," who sublet the work to others, a proceeding which he rightly condemns as subversive to good gardening. The incompetence of many head gardeners who crept into the profession without a training was an acute question even in these far distant days and one pressing for amendment, and the instability of employment owing to the fickleness of employers seems to have been as pronounced as it is in modern times. The names of several gardeners of distinction are given, among whom that of James Lee, senior, occurs as gardener to Secretary Johnston. Johnston, I think it is, who relates that James Lee, the co-originator of the famous Hammersmith vineyard, was born in Scotland, but it is just as probable that James Lee was the junior and the son of the above-named. Johnston, according to Langley, possessed the finest collection of fruits of the period, and his garden in other respects was filled with the best productions. He was for a brief period Secretary for Scotland, and, as an historical personage, was a medium for supplying information to the squadron volante in Scotland, by whose vote the Union of England and Scotland was effected in 1707.

As a garden designer, Langley was on much the same level as he was as an architect. Notwithstanding his recommendations of hideous prospects terminating in newly-built ruins or painted representations of ruins, he had enough good taste to condemn the destruction of old Roman Cypresses, such as had occurred a short time previous to his writing. While the most absurdly-tortuous walks and drives meander through his plans, he yet retained a respect for straight-lined hedges, and mentions with approbation a hedge of Hornbeam 30 feet in height which was kept in perfect condition. A few years previously, it will be remembered, Addison and Pope led the attack on formal gardening, and the truly awful natural style which followed was in course of establishment. Langley hesitated where Kent had no hesitation. Langley loved trees. He looked upon their production and preservation as an invaluable asset in the national economy, and a matter of vital importance to the nation. Kent and his followers, on the contrary, had no compunction in regard to anything animate or inanimate which stood in the way, and thus not improbably the very honesty of purpose evinced by Langley proved a fatal bar to his progress. It is as a garden designer that Professor Blomfield curtly dismisses him with the remark, "Batty Langley published a sumptuous book on *The New Principles of Gardening*, the value of which consists chiefly in the paper and binding."

If we examine the letterpress, or at least that of the practical and cultural parts, we discover the value of his books, and at the same time are forced to the conclusion that if a failure as a landscape gardener and an architect, Langley was so at the expense of a first-rate gardener. We may smile or sneer at his designs and the multiplicity of his statues and other accessories, but in the purely cultural parts of his books, whether he treats of trees, fruit, or vegetables, it must be admitted that he is a master. His first gardening book is the above-mentioned *New Principles of Gardening*, a stout quarto "Illustrated with great variety of Grand Designs, curiously Engraven on 28 Folio Plates by the best Hands." The dedication is to the King and the volume is by no means simply a dissertation on the new principles of landscape gardening, but treats of fruit culture, trees, evergreens, flowering shrubs, the disposition of gardens, with a section on geometry as applied to garden work, and an extended and distinct part devoted to the cultivation of vegetables. Some of the "designs" are not without value. One plate, from an earlier work, shows how to proceed in laying out various figures, another is of an orchard, six show the disposition of vegetable gardens, and the remainder are of the landscape order. On p. 67 notice is given of the intended production of a volume of fruit culture as a reason why some material matter was not fully explained in the text. It is stated that in both volumes he propounds the following principles, the value of his teaching becomes obvious, because they were indeed "new." A horizontally-trained branch became apt to bear fruit, a perpendicular one to form wood. Branches and shoots should be spaced wide enough apart that the leaves of the one do not overlap those of the others. Strong shoots to be left long in pruning, weakly ones short. Tap-roots are prejudicial, and frequent removal makes for fruitfulness and health. The value of various stocks for different soils is noted, and select lists of the sorts given. In the chapters on trees he advises heading down young Oaks, and gives a warning about deep-planting. In the part devoted to evergreens, he combats Bradley's recommendation to allow tap-roots to remain, and in that on the Furze-bush and Broom Langley ridicules the fashion of planting shrubs which were rare to the exclusion of those which, though beautiful, were, like the above-mentioned, very common.

The vegetable section, though almost as long as all the others together, is nevertheless concise. The names, medicinal virtues and temperaments are from Gerard, the cultural parts by the author. Asparagus was had in use from the beginning of November, and is one of the important vegetables to which several pages is devoted. The Potato is allotted two-and-a-half pages, the sorts in general cultivation being "The White Kidney Potato, so called in regard to its form, which is the true form of a sheep, or hog's kidney"; the "White Round"; "The Lancashire, of a very pale reddish colour"; and "the red Potato with a rough coat, the very best of any." He advised large potatos cut for sets in preference to small tubers, and instead of the few inches allowed to each as recommended by previous writers, he gives 12 inches by 15 inches. In the notes on the Cucumber, he combats the assertion of Bradley that it was essential to cross the female with the male blossoms, and also notes that it was not essential to lay by the seeds for several years to induce fruitfulness. He carried his seeds in the "watch pocket of his breeches for one season and found that enough!" Following the above, he published an octavo volume on forestry entitled, *A Sure Method of Improving Estates by Plantations of Oak, Elm, Ash, Beech and other Timber Trees, Coppice Woods*, &c. London: MDCCXXVIII. It is dedicated "To the Right Honourable the Lord Viscount Torrington, and to the rest of the Lords Commissioners of the Admiralty." He seems to have been much attracted by Dr. Hale's *Vegetable Statics*, and gives experiments of his own to show that vegetables "imbibe" and "perspire." The chapters on the various trees are headed "On the Perspiration" of whichever tree was the subject to be discussed. In all his books the author inclines to the phonetic in spelling, and in this occurs "Heithorn" for Hawthorn and "hei" for haw, no doubt his nearest attempt to get at the sound. In Essex I have noted the Hawthorn called "ipsey-oie," and every county seems to have its own rendering. In this book he lays it down as an incontrovertible fact that no young tree will succeed if planted on ground previously occupied by trees of the same kind, and there is many another interesting remark scattered throughout its pages.

The book he promised the readers of *The New Principles* appeared in 1729, though the preface was written in July, 1728. It is the best known and also the most valuable of his horticultural productions:—"*Pomona: or the Fruit Garden Illustrated.* Containing Sure Methods for Improving all the Best Kinds of Fruits now Extant in England. The whole illustrated with above 300 drawings of the several fruits curiously engraven on 79 large folio plates." The dedication is to The Queen's Most Excellent Majesty. In addition to an interesting introduction there are 27 chapters, a few of which are devoted to experimental purposes on the lines of Dr. Hale's *Vegetable Statics.* Those of a practical nature are remarkable for the advanced statements they contain, such as allowing plenty of space to the shoots, to prune early in autumn, while the foliage is yet on the trees, in order that the proper distances at which to leave the shoots may be correctly gauged.

It is from the notes made on the ripening of the various fruits illustrated that it may be assumed Langley was either a nurseryman or had a large orchard, though he may have got some of his specimens from Secretary Johnston's garden. Besides the fruits, illustrations of the growths of the various kinds, their flowers and how to prune, are also faithfully detailed. To ensure illustrations true to nature, he laid the backs of the various leaves on the paper and drew the correct outlines and the fruits he halved, and after drawing the outline filled up the figures. Included is an interesting account of cyder Apples, written by Mr. Hugh Stafford, an ancestor of Lord Iddlesleigh, Pynes, near Exeter, especially for this work, in which the history of the Royal Wilding is given in detail along with other interesting matter. *R. P. Brotherston.*

DEBATING SOCIETIES.

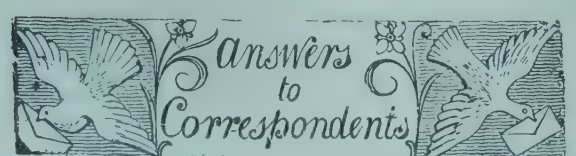
BRISTOL AND DISTRICT GARDENERS' MUTUAL IMPROVEMENT ASSOCIATION.—The fortnightly meeting of the above association was held on February 13 at St. John's Parish Rooms, Clifton. MR. THODAY presided over a very large attendance and a most excellent lecture was given on "Vegetable Culture" by the well-known Judge and Exhibitor at the various flower shows, MR. WILKINSON. The lecturer said that vegetables were the chief feature in every garden, and to obtain good crops the ground must be deeply dug and well manured. In a great many gardens the crops are spoilt by sowing the seeds too thickly. The prizes given by the President, COLONEL CARY BATTEN, J.P., for two Cypripediums were won by Messrs. Woodward, Jennings, and Parker.

CHELMSFORD AND DISTRICT GARDENERS' ASSOCIATION.—The usual fortnightly meeting was held at the East Anglian Institute of Agriculture on Friday, February 14. MR. J. SEABROOK presided over about sixty members. MR. P. H. RUSSELL, of the firm of Messrs. W. Seabrook and Sons, lectured on the "Training of Fruit Trees." In his opening remarks the lecturer said that this subject should be studied up by every young gardener, and that before correct training could be done a thorough understanding of pruning was necessary. By the aid of diagrams he illustrated his remarks on good and bad workmanship. Specimen trees of cordon, espalier, bush, pyramid, gridiron, and fan-shape were shown, the lecturer dealing with the management and training of each individually. A hearty vote of thanks was accorded Mr. Russell for his interesting and practical lecture. Thanks was also tendered to Messrs. W. Seabrook and Sons for supplying an excellent set of trees for demonstration.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT SOCIETY. — The monthly committee meeting of the above society was held in the R.H.S. Hall on Monday, February 10, Mr. THOMAS WINTER in the chair. Six new members were elected and three were nominated. The sick pay for the month amounted to £54 3s. 8d. and the maternity benefits to £12. The sum of £55 6s. was paid to the nominee of the late Mr. J. Heasman. One member, having reached the age of seventy, was allowed to withdraw £40 18s. 3d. from his deposit, still leaving £10 to his credit. One lapsed member was also allowed to withdraw his deposit, amounting to £33 18s. 1d. The committee wish to draw the members' attention to the annual meeting, which will be held in April instead of March.

KILMARNOCK AND DISTRICT GARDENERS.—The usual monthly meeting was held on February 12. Mr. R. K. SILLARS, the President of the Association, delivered a lecture on "Orchids," reviewing the progress made in orchid hybridisation and cultivation during the last generation. Dealing with the question of culture emphasis was laid on the necessity for care and judgment in watering, ventilating, and shading. The lecture was both interesting and instructive, and was much appreciated by the numerous audience.

(*See also p. xiv.*)



ARTIFICIAL MANURES: *Enquirer.* We cannot recommend any particular firm for the purchase of "artificial manures for a trade grower." You should scan our advertisement pages and write to several firms, asking for quotations, and—as price alone is no guide to value—guaranteed analyses.

ASPARAGUS CULTURE: *E. C.*—At the commencement of April the dressing of seaweed which you have placed on the Asparagus beds should be raked off, so as to leave a surface of fine soil for the young Asparagus tops to push through uninjured.

BEGONIA GLOIRE DE LORRAINE: *G. S. S.*—Yes, this Begonia is a true hybrid, its parents being B. Socotrana and B. Dregei. In the year 1907 the *Gardeners' Chronicle* published many instances of seedlings raised from B. Gloire de Lorraine. In the issue for March 2 there appears an illustrated note, and letters were also published on January 12, 19, 26, and February 9 of the same year.

CATTLEYA TRIANÆ FLOWER SPOTTED. — The flower has the appearance of being spotted by condensed moisture. This is often caused by a sudden fall of temperature at night whereby the moisture in the air condenses on the flowers or drips on them from the roof. Under such conditions plants in one part of the house might be affected more than those in a more airy situation. Syringing the plants when in leaf or flower would be likely to produce a similar condition.

FASCIATED CYCLAMEN BLOOMS: *W. J. W.*—The specimen sent is an interesting example of fasciation. We do not remember having previously seen 3 blooms on the same stem. At the last exhibition of the Royal Horticultural Society (see p. 125, last issue) one of the plants of the variety Mrs. Buckston exhibited bore a small leaf, as well as a flower, on one stem. This fasciation usually appears on plants which have been highly manured.

GRAPES: *W. A. F.* Both the varieties, Appley Towers and Lady Hutt, were raised in 1885 by Mr. T. D. Myles, at Appley Towers, Ryde. A description of Appley Towers was given in the *Gardeners' Chronicle* for October 15, 1881, pp. 494 and 501, but this issue is out of print.

HEDGES OF YEW, THUJA, AND HOLLY: *J. H.* Hedges of these trees may be clipped, as required, not earlier than the end of April or later than the commencement of September. Any necessary hand pruning is best done during the latter part of April. To keep them shapely hedges which are growing vigorously should be clipped at least three times a year, avoiding periods of drought.

LAWN MANURE: *P. McL.* The best nitrogenous manure for applying as a stimulant to lawns during the growing season is sulphate of ammonia at the rate of 1 lb. per square rod. To ensure evenness of distribution the sulphate of ammonia should be thoroughly mixed with four or five times its bulk of fine soil, which should be free from the seeds of noxious weeds. For the first application, which should take place at once, a much greater proportion of soil may be used with advantage—a bushel per square yard would not be too much. The dressing of fertilizer and soil may be repeated several times during the season, provided that the rains have been sufficiently heavy to wash each dressing into the soil before another is applied. To obtain the best results from the use of an artificial nitrogenous manure the soil must contain sufficient potash and phosphates. If these elements are deficient we would advise you to use, instead of sulphate of ammonia alone, the following mixture:—¾ lb. sulphate of ammonia, 1 lb. superphosphate, and ¼ lb. sulphate of potash per square rod, mixing it with soil as with the sulphate of ammonia.

LEAF-MINER IN CINERARIAS: *E. F. G.* To prevent the fly laying her eggs, which develop into the destructive leaf-mining caterpillar, the foliage of the Cinerarias should be regularly sprayed with quassia extract or any other distasteful liquid. The leaves which are badly affected should be removed and burnt, and the remaining insects crushed between the finger and thumb.

NAME OF BOOK: *F. C. L.*—The work you mention is still the best of its kind.

NAMES OF PLANTS: *J. MacD.*—Masdevallia triangularis. *F. A. D., Dolgelly.* 1, Dendrobium Devonianum; 2, Dendrobium Wardianum. *F. T. T.* 1, Pleurothallis Grobyi; 2, Stelis micrantha; 3, Octomeria graminifolia; 4, Polystachya luteola. *A. F.* Cypripedium Murillo (Argus × Boxalli); 2, Cypripedium nitens insigne × villosum); 3, Cypripedium Wrigleyi (Charlesworthii × villosum); 4, A cross of Cypripedium insigne and probably C. villosum. *J. MacD.*—(Thanks for P.O. for 2s. 6d. for the R.G.F.). 1, Tsuga Canadensis; 2, Cedrus Deodara; 3, Cedrus Libani; 4, C.L. var. brevifolia; 5, C. atlantica. *G. H.* Specimen insufficient for identification. Send when flower.

PATENTING AN INVENTION: *Peter.*—As you ha successfully placed one invention, we woul suggest that you follow the same procedu in the present instance. Patent agents a much the same as other classes; most of the are thoroughly trustworthy. We should n patent any invention straight away, b would first provisionally protect it (th cost is much less) and then endeavour to pla the invention with a manufacturer who woul complete the patent, paying you as may b arranged.

POLYANTHUS DISEASE: *Enquirer.* The Polyan thus disease may be readily checked if th worst leaves are removed and the plants the sprayed with a solution of liver of sulphu 2 ounces to 3 gallons of water, repeating th spraying after a week's interval. The plant may be potted, and if the foliage is kept dr the disease will not again appear.

ROSES FOR A SOUTH WALL: *C. E. W.*—Goo Roses for a south wall are Climbing Papa Gon tier (pink), Lady Waterlow (salmon-pink edged carmine), Mme. Alfred Carrière, Blus White, and Rêve d'Or (yellow). Much de pends on the extent of wall to be covered, an whether a perpetual flowering variety, i.e. autumnal, is desired, or a Rose to make a con siderable show for a short period. All th varieties named are autumnal flowering, an it seems a pity to use a south wall for a Ros that is only summer flowering. Moreover such varieties as Wichuraianas and Dorothy Perkins seem, as a rule, to do better on screen or trellis, where the wind can circulate aroun them, than on walls. Lady Waterlow does no generally cover a very large space. Rêve d'Or however, often makes big growth in the Wes country, and has very fine foliage, and Climb ing Papa Gontier, when trained fan-wise o more or less horizontally, so as to make i break from all the joints, is often very effectiv on a wall. If something more of the nature of summer flowering Rose is required, it would be well to try Tea Rambler, which has beauti ful foliage and makes large growths, or Ariel which is not unlike Tea Rambler in foliage and habit of growth, but is a single-flowered variety, might be planted with Tea Rambler if there is room. Although the last-named Roses will look after themselves when well started, it is advisable to see that the soil they are planted in is good and contains plenty of nice fibrous loam. A Rose that is well started in this way will often gain quite a year and some times more on one that has to fight for its life before it has properly developed its root system.

STERILISING SOIL WITH FORMALIN: *Enquirer.*—We fear you do not read your *Gardeners' Chronicle* attentively, for this subject has been dealt with frequently of late. In our issue for November 30, 1912, p. 417, we published an illustrated report of a lecture delivered on soil sterilisation by Dr. Russell at the conference of the National Chrysanthemum Society. See also, in the issue for March 2, 1912, p. 146, etc.

TULIPS NOT FLOWERING: *W. S.* The appearance of the plants sent indicates that the bulbs had not been potted long enough to become sufficiently rooted before they were placed in a forcing house. It is essential that Tulip and similar bulbs are well rooted before any attempt at forcing is made.

VINE ROOTS: *M. C. B.*—We do not advise you to encourage the vine roots which have extended from the border into the adjoining gravel path; such a course would probably induce shanking of the berries. It is far better practice to confine your attention to the roots in the border.

WALLFLOWERS DISEASED: *Enquirer.* The plants sent are badly affected with Sclerotinia, and should be burnt. The fungus was probably in the soil, which should be treated with quick lime.

Communications Received.—H. W. W.—W. P.—H. C. L.—A. H. L.—Peter—F. A. D.—H. E. W.—F. E. C.—E. W.—E. B.—W. J. T.—F. W. C.—E A B.—L. F. P.—M. A. W.—E. H.—W. E. B.—W. G. S.—G. E. L.—R. A. M.—H. C. L.—R. A., France—F. C.—L. K., Switzerland—W. J. W.—G. P. M.—L. D. K.—F. M.—E. B.—A.—J. B. —M. & Co.—W. G. K.—H. P I—R. D.—H. C. D.—A. J. G.—G. H. T.

THE
Gardeners' Chronicle

No. 1,367.—SATURDAY, March 8, 1913.

CONTENTS.

Asperula Nitida ...	152	Kew notes ...	146
Belvoir Park, Belfast...	147	Market fruit garden, the	148
Benevolent Institution, Gardeners' Royal ...	153	Market gardening— The Evesham custom	156
Books, notices of— Insecticides, Fungicides, and Weed-Killers	152	Matthiola pedemontana	152
Sub-Alpine Plants, or Flowers of the Swiss Woods and Meadows	147	Moraines	154
Carnation propagation	155	Obituary	159
Carnations, perpetual-flowering and Mendelism	154	Orchid notes and gleanings	146
Chrysanthemum, Mrs. Maud Jefferies ...	155	Peach trees training of	145
Fertilisation of plants	154	Rockery, the ideal ...	153
Florists' flowers— Sweet Peas	155	Societies— Manchester & North of England Orch d	159
Foreign Correspondence— Notes from Southern Italy	149	North of England Horticultural ...	159
Globularia bellidifolia	152	Royal Horticultural	157
Hooker, Sir Joseph, Lecture Fund... ...	159	Scottish Horticultural	153
		South African Combretaceæ, the	147
		Testimonial to Messrs. Aduitt and Naunton	154
		Week's work, the ...	151
		Wilks, Rev. W., testimonial to	153

ILLUSTRATIONS.

Angraceum Andersonii 146
Asperula Nitida and Globularia bellidifolia (supplementary illustration) ... ...
Belvoir Park, Belfast, view in the gardens at 148
Cocker, William, portrait of the late ... ...
Matthiola pedemontana in the Pont de Nant Botanic Garden, Switzerland 149
Meconopsis Wallichii in Belvoir Park Gardens, Belfast 147
Rock garden, details in the construction of a .....
Sweet Pea foliage, types of ... ...

TRAINING OF PEACH TREES.

WHAT is the proper system for training Peach trees? I will begin by mentioning the worst, namely, the time-honoured fan-shape. This system is unscientific, because it is opposed to what are universally recognised with trees in general, and Peaches in particular—the unalterable fundamental principles of physiology. The nearer to the perpendicular a branch is trained the greater are its chances of vigorous growth, and in fan training, every degree is represented between perpendicular and horizontal, while no three branches have the same angle. It is true that branches are kept alive for many years in a nearly horizontal position on some trees, when carefully tended, but their existence is very artificial, and if for any reason the upper part of the tree is allowed to grow unchecked, even for a very short time, the artificiality of the system is speedily manifested.

The system is difficult to teach, because the ideal aimed at is unattainable. A fan-trained tree on paper is a beautiful object. It has regularly spreading branches, trained in faultless lines, with its spurs all of equal vigour, proceeding at measured distances from the upper side of the branches, and each of the spurs has a fruiting shoot, from the base of which is produced its successor. A corresponding branch on the opposite side of the tree is its exact counterpart.

It was my privilege, under the direction of the late Mr. A. F. Barron, to assist in attending some of the trees trained by that king of Pomologists, Mr. R. Thompson, author of the *Gardeners' Assistant*, who even then occasionally bestowed his blessing on his progeny. I am bound to say there was not among those trees one which could at all compare with the pictures. Buds would not always produce good shoots just where they were wanted, and those on the lower branches had a tendency to become weak. It was difficult to keep the lower stems suitably furnished, especially near the trunk, and the fruit on the lower parts was deficient in quality as well as quantity. Hence it will be seen that hard-and-fast lines could not always be followed, and when such is the case the task of both tutor and pupil becomes difficult.

The time it takes to produce a tree is worth considering. Supposing everything goes on favourably — no bad seasons when growths cannot ripen, no gumming from present bruisings or previous surgical operations, an ideal situation, the soil faultless, and the attention perfect—one may expect a fan-trained tree to become fully developed in ten years from the time of planting it, a young trained specimen, against an open wall. It might be worth waiting for, perhaps, if we could be sure of keeping it when once obtained. But, alas! I fear ten years is far above the average of Peach tree life in this country.

A considerable amount of time and labour is necessary for a fan-trained tree, and it must be spent at the right moment and in the right manner. A man in the greatest hurry may find time to snatch a few undesirable shoots from his Tomato plants, or even to stop a shoot or two on his Vines as he passes through a house, but the Peach tree will not accommodate itself to these flying touches. Deliberate thought must be given to the action, and in the case of fan-training that thought must carry one on years in advance. One must attend to the more vigorous growths and to those likely to become vigorous, and must see in one's mind's eye what is likely to be the result next year and the year after of the present operations. In some good old establishments, now unfortunately fast disappearing, a handy man is permanently employed, whose chief duty is to attend to the fruit trees, and nothing else is allowed to stand in the way of his attention to them. But the present day rush and stinted labour are upsetting such arrangements, and work which should be done to-day has to wait until to-morrow or even next week. Hence we have merely to consider in many cases the shortest cut to partial success; and in our necessities we occasionally discover that the short cut is the most successful one. I will endeavour to show that this may be the case with our training of Peach trees.

What I consider the best form I will call till someone suggests a better name the fish bone cordon, and for this form I claim many advantages, namely:—

It furnishes a 10- or 12-foot wall in three years.
The system is easily taught to beginners.
All branches are trained at the same angle.
Fresh varieties are soon tested.
No winter or spring pruning is needed.
Trees are easily lifted and replanted.

We commence with maiden trees, procuring them early in autumn, and merely cut off the unripe wood. They are planted upright at a distance of three feet apart. When growth commences, sufficient side shoots are trained at an angle of about 30° (the tips of the branches pointing upwards), and all shoots not wanted for this purpose are rubbed off, not pulled off downwards, as this would be apt to tear the bark. Sometimes one may secure three or four pairs of branches during the first season's growth; and if these become moderately strong and well ripened, it will do no harm if a fruit is allowed to remain on each branch the following season, while the successional shoot is encouraged to grow from as near the main stem as possible. Not later than the beginning of September in each year the unripe points of all shoots should be cut off, and all fruiting branches removed as soon as the fruit is gathered. The Peach tree does best when no winter or spring pruning is necessary, and it can easily be managed without this. While the tree is furnished with leaves, healthy and vigorous, any wound made with a sharp knife is quickly healed; still it is best not to have any strong shoot to cut off at any time. The Peach tree very much dislikes the knife, and is often spoiled by mutilation with this instrument in an early stage, though it may not show the effects until later on.

The second year, more branches are trained on each side of the main stem, and the third year, if all goes on well, will see the wall furnished; while the fourth, weather permitting, will bring a full crop of fruit from the base to the top.

So far I have alluded to trees on walls only, but the same thing applies to a trellis inside a house, excepting that the goal may sometimes be reached twelve months earlier.

Trees grown in this way are easily lifted, and there are many advantages in this. One is that by replanting in autumn over-luxuriant roots can be checked, suckers effectively removed, and the flowering period retarded. Peaches generally flower earlier outdoors than is good for them.

Another advantage is that any mistakes made in the borders can be easily rectified, and many of us certainly do make mistakes, especially when dealing with an unfamiliar soil or climate. Also it makes it easy to fill gaps in a house. Many bad cases of bud-dropping have been promptly cured in houses by carefully replanting the trees in early autumn, and gumming has been prevented.

Within a short distance of Salisbury are to be seen examples of both the systems just described.

At Longford Castle there are fan-trained trees as good as it is possible to see, of which Mr. Tucker has every reason to be proud. On the contrary, at Wilton, where a great many Peaches are grown under the superintendence of the veteran Mr. Challis, I do not think there is now a fan-trained tree on the place. Mr. Challis's indoor trees are mostly planted upright across the house

in double lines, so that there are some places where the head room is limited; and the space is filled by allowing the trees to extend laterally, so that there is no space wasted and no necessity for continually chopping the tops of the trees.

MR CHALLIS is very particular in keeping to correct form with his trained Pear and Apple trees, but in the case of the Peach he allows much more freedom. That the system answers is proved by the fact that he continues to practise it and by the large quantity of superior fruit produced.

As long ago as August, 1881, a correspondent wrote in the *Gardeners' Chronicle*:—"Mr. Taylor, of Longleat, has set himself a task in attempting to prove that the fan system of training fruit trees is wrong in principle according to all our notions of vegetable physiology," which shows that what I have attempted to describe is no novel idea. Even Mr. ROBERT THOMPSON, wedded as he was to the fan system, says of it in the original edition of the *Gardeners' Assistant*, "It requires particular care and some knowledge of the physiology of the tree, otherwise the latter will become weak at the bottom and too strong at the top, and also exhibit irregular growth throughout."

I believe it is a fact that many head gardeners will not attempt to teach their young men how to prune and train Peach trees, since it is so much less trouble and so much safer to do it themselves.

I am sorry to find that the newly invented wall nails with pliable clips, so useful for training many trees and plants, are not suitable for Peaches, as they cause the trees to gum where there is the least pressure against the nail. When shreds are used there is never any need for a nail to touch a branch.

When driving a nail, the operator should always continue to hold the shank till he has finished with the hammer, bruised digits being much more easily healed than bruised branches! *Wm. Taylor.*

ORCHID NOTES AND GLEANINGS.

CATTLEYA TRIANAE, "QUEEN OF THE EARTH."

A BEAUTIFUL flower of this fine variety, which secured a first-class certificate at Manchester last year, has been forwarded by Mr. WILLIAM THOMPSON, Walton Grange, Stone, Staffordshire (Orchid grower, Mr. J. HOWES). It is one of the largest and best-formed varieties, and in many respects resembles C.T. "The Premier." The flower measured 8 inches across, with petals 3 inches wide, the lip being proportionately large. The flower is silver-white with a lilac-pink flush, and a darker rose veining on the tube of the labellum, the front of which is rose-crimson with a yellow disk. The labellum and the petals are finely crimped at the margin.

ODONTOGLOSSUM HYBRIDS AT WALTON GRANGE.

MR. THOMPSON also forwards a flower of a beautiful hybrid Odontoglossum of unrecorded parentage. The bloom is 4 inches across, the petals, upper sepal, and lip being 1 inch in width, the lateral sepals slightly narrower. Although the ground colour is white, the heavy claret-purple blotching on the sepals and petals nearly covers the surface, the white only appearing in narrow, undulating transverse lines, and on the margin. The lip is cream-white, blotched, all save the front, with reddish-purple, the crest being yellow with red lines. It appears to be of the same class as O. Thais Glebe variety, which was recently given the R.H.S. Award of Merit when shown by C. J. PHILLIPS, Esq.

The bloom was accompanied by six other flowers of very beautiful hybrid Odontoglossums, all showing rich and varied colouring. Two have wholly deep claret-red sepals and petals with a slight white margin, another has nearly as much colour, but with a few white lines and a fimbriated white margin, whilst two resemble closely the best forms of blotched Odontoglossum crispum, one having the charming salmon-rose tint of O. crispum Graireanum, but with much broader segments.

ANGRAECUM ANDERSONII, ROLFE.

MANY and strange are the forms assumed by Orchid flowers, some simulating the appearance of such insects as bees, flies, spiders, etc., others having the most quaint devices in order to secure fertilisation. This new species, Angraecum Andersonii, may rank as one of the most curious of the whole family, not for its flowers, but because it appears entirely leafless.

It was found by Mr. ANDERSON, of Accra, on the Gold Coast, and sent to Sir F. W. MOORE at Glasnevin in 1911. On its arrival the plant bore more resemblance to a large dried-up spider than an orchid; however, it was hung up in the stove by a piece of wire, and here it has flourished. The stem bears flowers and scale leaves, but is almost hidden by the roots which it carries. It is about 3 inches long, grows downwards, and is terminated by a pointed bud covered with brown scales.

The roots, about 1-5th of an inch in diameter, hang downwards and are waved and sometimes branched, and from a foot to 18 inches in length. The old ones are dark grey, the younger ones greyish green, and spotted in longitudinal rows with white.

Like the roots of other epiphytal Orchids—Vanda, Epidendrum, etc.—the cortical tissues are closely packed with chlorophyll, but in this case the velamen is very thin, for since the plant is leafless the roots have to do not only the work of absorption, but also that of assimilation. Where a root comes into contact with an object on which it may obtain anchorage, or even when two roots come into contact with one another they produce strong root hairs, the purpose of which is to attach the roots to their substratum. The flowers are plentifully produced throughout November and December, about three-quarters of an inch long borne on erect stems. They are half globose with long spurs, nearly a transparent white with an emerald green line on the sepals, and a light green column. The flower stems are persistent for several years. *A. F. Ball, Royal Botanic Gardens, Glasnevin, Dublin.*



FIG. 65.—ANGRÆCUM ANDERSONII: FLOWERS WHITE WITH GREEN LINES ON THE SEPALS.

KEW NOTES.

PRUNUS TOMENTOSA.

THE large specimen of Prunus tomentosa on the lawn adjoining the T-range flowered this season, in company with the Almond and the purple-leaved Myrobalan, some two or three weeks earlier than usual. The plant is 5 feet to 6 feet in height and 12 feet in diameter.

P. tomentosa forms a shapely bush thickly furnished with twigs along which the flowers are freely borne in pairs and occasionally in threes. They are tinged in the bud state with pink, but the expanded blooms are white and about ½ inch in diameter. The dark colour of the twigs forms a pleasing contrast to the white flowers. The species is a native of China and Japan and belongs to the Apricot family, which also includes P. triloba flore pleno and P. Mume.

PINUS AYACAHUITE.

SEVERAL young trees of this attractive Pine, some 12 feet in height, have been for some time past a conspicuous feature near to the Isleworth Gate. The tree is commonly spoken of as the Hickory Pine or White Pine of Mexico, where it reaches a height of 100 feet. P. Ayacahuite is said to have been introduced to the gardens of the Royal Horticultural Society at Chiswick by Hartweg about seventy years ago, but large specimens are very scarce in this country. This is evidently due to the plant not being perfectly hardy. One of the finest specimens is in the gardens at Bicton, Devonshire, the tree having a height of 65 feet. In general appearance P. Ayacahuite resembles P. excelsa, the Bhotan or Blue Pine of the Himalayas, and has similar glaucous green leaves, but the young shoots of the Mexican species are pubescent, whilst those of P. excelsa are glabrous. The cones are about the same size in cultivated specimens, but easy to distinguish in those of P. Ayacahuite, as the scales near to the base are reflexed. The cones are borne singly or in pairs, and occasionally three in a cluster. Those on the Kew trees are 7 inches to 8 inches long and 2 inches in diameter. A considerable number of cones adds appreciably to the beauty of the trees. Judging by the Kew specimens, the tree bears cones at an earlier stage than most of the Pines.

PICEA OMORICA.

THE Servian Spruce, Picea Omorica, or P. Omorika, as the name is sometimes spelt, is a native of south-western Servia, Bosnia, and Montenegro, and was not known in this country until 1875. Dr. Pancic, of Belgrade, was the first to record the species from specimens at Zaovina, Servia. The tree grows at an altitude of from 2,000 feet to 6,000 feet. P. Omorica belongs to the Omorica, or flat-leaved Spruce Firs, and is closely allied to P. ajanensis and P. hondoënsis, both natives of Japan, the Sitka

Spruce, P. sitchensis, of North America, and the rare Californian Spruce Fir, P. Breweriana.

The habit is distinct; in relation to the height of the tree the lower branches are comparatively short, giving it a narrow, pyramidal shape. The largest specimen at Kew, which was raised from seeds twenty-four years ago, is 34 feet in height, the diameter of the lower branches 14 feet, and the circumference of the trunk 9 inches, at 3 feet from the ground. In its native country the tree grows from 50 feet to 100 feet high. The leaves are dark-green above, greyish-white beneath, and ½ inch to ¾ inch in length. The branches on the upper half of the tree grow upwards, but with age they assume a drooping or pendulous character, which is very noticeable on the lower branches. One of the larger trees at Kew is bearing cones, which are 1½ inch to 2 inches in length and ⅝ inch in diameter. Judging by numerous young plants in the Kew collection, the Servian Spruce should prove a useful tree for ornamental planting. *A. O.*

THE SOUTH AFRICAN COMBRETACEÆ.

(*Continued from p.* 140.)

C. erythrophyllum var. obscurum is a tree or bush occurring sparingly on the banks of the Vaal, a tributary of the Orange or Gariep River, where, on account of the paucity of the arborescent vegetation, it is included in the Conservancy Act. The brilliant crimson tints which the leaves assume towards autumn and early winter (a phenomenon rare in South African vegetation) is the subject of comment by Burchell, who likens it in this respect to the Indian Almond (Terminalia Catappa); hence also the colonist name of Roodeblat or Roodeblaad (red leaf) and Rooibosch (red bush). Sim also mentions "Bush Willow"† as applied to this species and gives the Kaffir name of "Umdubu."† The yellowish wood accounts for the Dutch name of "Geelhout" (Gelbholzbaum).

It is a peculiarly variable and perplexing species, difficult of systematic limitation, but an examination of the material at Kew and the British Museum tends to the conclusion that Sonder's C. glomeruliflorum, identical with Engler and Diels's C. lydenburgianum, can only be regarded as a variety, and that an unstable one of C. erythrophyllum, which former name is, however, antedated by Van Heurck's and Muell.-Arg. C. erythrophyllum var. obscurum, based also upon Zeyher's 550, a name apparently overlooked by the majority of systematists. Engler and Diels evidently recognise the close affinity of these two species, for in their key they specify the absence or presence of pubescence respectively as the only point of difference, a character exceedingly variable in both species. Gerrard's Combretum Sonderi is reputed to possess exceedingly large leaves, viz., 15 to 18 cm. long and 5 to 7.5 cm. broad, longer petioles and longer fruit, but the authors quoted, who have apparently seen the type, regard it as conspecific with C. glomeruliflorum, and hence I follow them in the assignation of that name. The colour of the flowers evidently varies, for Tyson describes them as greenish, Wood as white, and in dried specimens they appear to be yellowish or a dingy brown. The species extends northwards into Matabeleland, where it was discovered by the traveller T. Baines in 1871. Of the commercial value of the tree little appears to be known.

8.—C. Galpinii, *Engler* and *Diels* in Engler's *Mon. Afrik. Pfl.* iii, 41, t.x., f.B. (1899).

A tree 5 m. high; second year's branchlets terete, greyish, glabrous, with prominently raised suborbicular leaf-scars; the lateral flowering twigs opposite or disposed in pseudo-whorls of threes, short, 2 to 7 cm. long, compressed and angular, hispid-villous, ferrugineous. Leaves opposite or in pseudo-whorls of threes, longer than the internodes; petiole short, rarely exceeding 4 mm.; leaf-blade oblong, gradually narrowing from the middle to the apex, rounded or broadly subcordate at the base, 3.5 to 7 cm.* long, 1.4 to 2 cm. broad, when young densely rufo-hispid-villous on both surfaces, thinly coriaceous at maturity, with the upper surface softly and thinly fawn-velvety and lepidote, and the lower surface very sparingly pubescent or glabrescent, thickly lepidote, the midrib, and 6 to 7 pairs of lateral veins slightly elevated; margin ciliate. Spikes solitary, axillary, slender, patently spreading, occasionally exceeding the leaves, narrowly cylindric, 3 to 5 cm. long, 1 to 1.5 cm. broad, the entire inflorescence lepidote and fawn-hispid-pilose; bracts minute, linear, deciduous. Receptacle 5 to 5.5 mm. long, the lower half fusiform and angular, the upper broadly bell-shaped, 3.5 mm. in diameter, and disarticulating at maturity; disk cup-shaped with a pilose margin; calyx-segments broadly deltoid, ciliolate. Petals clawed, 0.6 mm. long, 1.2 mm. broad, obreniform, ciliate at the apex. Stamens 6 to 7 mm. long, glabrous. Style stout, 4 to 5 mm. long, glabrous; stigma truncate or emarginate. Fruit four-winged, elliptic, rounded, emarginate, or tipped by the persistent style-base, rounded at the base, 1.9 to 2 cm. long, 1 to 1.5 cm. broad, brownish, the body densely lepidote, the wings averaging 5 mm. broad, transversely striate; pedicel quadrangular, 3 to 4 mm. long.

Burtt-Davy in *Transvaal Agricultural Jour.*, v. (1906-07), 424.

Kalahari Region.—Transvaal; Hillside, Avoca, near Barberton, 570 m., Sept., 1890, Galpin, 1112 (fruit and flow. spec.). C. Galpinii also occurs in the Kaap River Valley near Barberton, and extends to Natal, where Medley-Wood collected it near Durban at low elevations in October, 1897 (No. 6547).

(*To be continued.*)

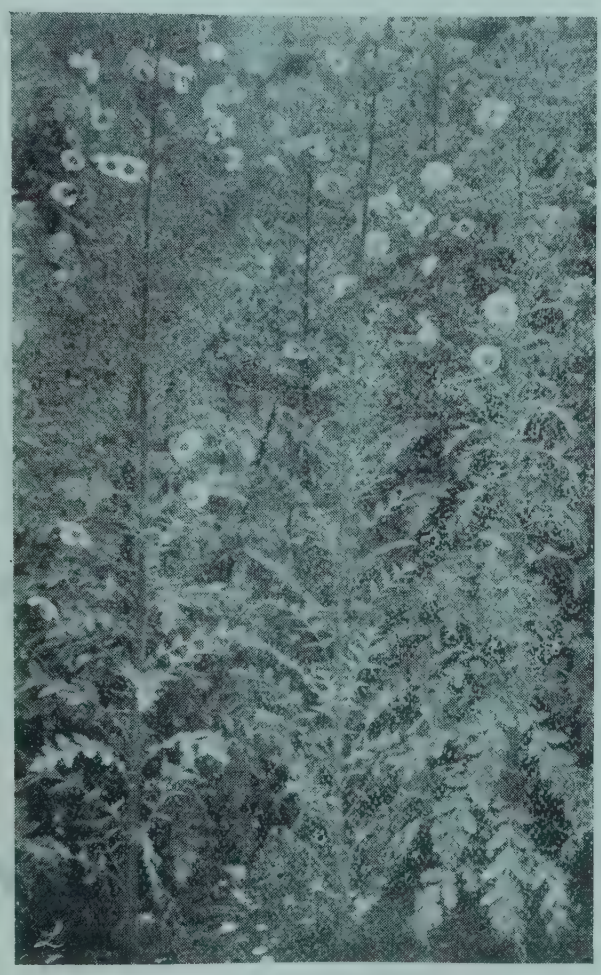


Fig. 66. Meconopsis Wallichii in Belvoir Park Gardens, Belfast.

BELVOIR PARK, BELFAST.

The Gardens at Belvoir Park, Belfast, the residence of Mrs. W. H. Wilson, have many features of interest, but the most beautiful part is the water garden, a view of which is reproduced in fig. 67. A stream which ran through this portion of the grounds afforded the necessary water; it was widened, pools were made in appropriate spots, and here and there a waterfall was formed. Many thousands of tons of stone have been used in forming a suitable setting for the numerous plants which are arranged on the banks, and for the stations made for the various sections of hardy plants. Many species of Primula have been planted near to the water, including P. farinosa, P. japonica and its varieties alba and splendens; P. pulverulenta, P. Bulleyana, P. Cockburniana, P. Sieboldii, P. sikkimensis, P. capitata, and P. rosea grandiflora. In association with the water are planted Caltha palustris (the King Cup), Spiræa palmata of the rose and white varieties; S. kamtschatica, S. lobata, S. Aruncus, Gunnera manicata, Funkias in variety, Acorus Calamus and its double-flowered variety; Iris Kaempferi, I. sibirica, I. versicolor in variety, Myosotis palustris, Osmunda regalis (Royal Fern), Ranunculus lingua (Giant Golden Spearwort), Polygonum sachalinense, Typha latifolia, Bambusa palmata, and numerous others. On the banks of the stream are arranged bold masses of Hemerocallis in variety, Meconopsis integrifolia, M. Wallichii (see fig. 66), Anemone japonica; numerous Funkias, Gunnera manicata, various Hepaticas, Papaver orientalis, P. nudicaule, hardy Fuchsias, Michaelmas Daisies, Montbretias, Pæonies, Rodgersia, Trollius, Kniphofias, Campanulas, Anchusa italica Dropmore variety, Hypericums, Irises, Monarda didyma, Œnotheras, Potentillas, Romneya Coulteri, shrubby Spiræas, Wichuraiana roses, and other plants. Evergreen and deciduous shrubs are freely employed in association with the flowering plants. Azaleas provide a bountiful display of blossoms early in the season, whilst in the autumn their brightly coloured foliage and that of the various Maples lend beauty to the waning years. Other fine shrubs include Berberis Thunbergii, B. Darwinii, B. stenophylla, Olearias, numerous Cotoneasters, shrubby Spiræas, Lilacs, Loniceras, Pyrus Malus floribunda, and other species of Pyrus. Beautiful climbing plants ramble over old tree trunks and climbing Roses and Wistarias in particular afford an abundance of bright flowers. There are several large bushes of Rosa moschata floribunda, some of which are 15 feet high and considerably more through. Numerous rock-garden plants succeed remarkably well in the more exposed positions, whilst shady places are made beautiful with a variety of appropriate subjects.—*W. V.*

NOTICES OF BOOKS.

Sub-Alpine Plants.*

Mr. H. S. Thompson has deserved well of visitors to the Alps who care for other things than climbing and sport. Not a few mountaineers have been grateful to him for his excellent book on the Alpine plants of Europe, and now he caters for those whose wanderings do not lead them so much into high places as in the pleasant pastures and upper woodlands.

It may at once be said that the author of *Sub-Alpine Plants* has maintained in his new book the reputation that he has already made for himself. This is high praise, for the bringing together and sifting of a vast amount of material must have been a task of no small magnitude, and it has been executed with that excellent judgment that could only come from a wide acquaintance with the plants in the herbarium and in the field.

The book opens with a very good introduction dealing with Sub-Alpine plants generally, and providing an interesting comparison between the Sub-Alpine flora and that of other parts of Europe, and particularly the British Isles

* These terms are, however, applied by Fourcade (*loc. cit.*) to *C. Kraussii Hochst.*

* Scarcely fully developed

* *Sub-Alpine Plants, or Flowers of the Swiss Woods and Meadows.* By H. Stuart Thompson, with 33 coloured plates by G. Flemwell. (London: George Routledge and Sons, Ltd.) Price 7s. 6d

Attention is drawn during the discussion to the wide range of altitude through which some of the species are distributed, to the occurrence of some Arctic types, and the exclusion of other northern forms which might perhaps be expected to occur. Of course, the fact that seeds of Alpines are often easily distributed accounts for the incursion of many of the high-level plants in Sub-Alpine altitudes. A remarkable instance of this, doubtless well known to the author, is to be seen in the stony plain between Fionnay and Mauvoisin, in the Val de Bagne. The river Dranse, which descends from the head of the valley several miles further to the south, carries with it seeds, and also fragments of plants, which are washed down by the torrent. The stony waste is, like many another in the mountains, the result of a washout following a temporary damming up of the stream by snow and ice. Such washouts may easily cover a given field with a mass of mud and stones several feet in thickness in a few hours. Then the colonisation by plants begins, and the higher Alpines which can tolerate the conditions imposed by lower altitudes share in the invasion.



FIG 67. THE WATER GARDEN AT BELVOIR PARK, BELFAST.
(See page 147.)

Mr. Thompson has very rightly reckoned with such plants, and his book thereby gains greatly in value. The only chapter we feel inclined to take exception to is that on the Alpine gardens, but this is, after all, a matter of individual opinion, and some people may, after all, be glad to know where they can see such gardens, and to get an idea of what they are likely to find there.

The bulk of the work is, of course, occupied by the description of plants, and the glossary of technical terms will probably be useful to the non-botanical reader. Indications of time of flowering, habitat, and distribution add to the interest of this part of the book.

A notice of the volume would be incomplete in the absence of reference to the excellent coloured plates by Mr. Flemwell. There are 33 of these, and some of them illustrate (rather less successfully we think) landscapes, both great and small, but the majority of them excellently well point the forms and (usually) the colour of individual plants. *Sub-Alpine Plants* is a first-rate work, published at a very moderate price. *J. B. F.*

THE MARKET FRUIT GARDEN.

UNSEASONABLY mild weather continued through the first half of February, with moderate rainfall. After the 14th the wind got into a cold quarter, North-West at first, but East to North-East later, while slight frosts occurred on several nights. On the 23rd mild weather returned, continuing until the very end of the month, when the wind was North-West. My rainfall was 1.12 inches, registered on seven days, all but two of which preceded the 10th, after which date no rain worth notice occurred. The dryness of the greater part of February was highly favourable to all classes of cultivators of the soil, and the frosts were even more important. The digging of fruit plantations was carried on under favourable conditions for the first time during the winter. The ground was a little too hard with frost on a few days, but this was welcome in that it enabled us to cart manure into the orchards, where the work had not been done in the autumn. A continuance of the frosty conditions would have suited growers of fruit, and the moderation of those conditions was safer to the swollen and in some cases opening fruit buds than severe frost would have been. Except on one occasion, when 5° of frost were registered, only 2 or 3° were marked on thermometers 4 feet from the ground level. But, as the frosts were wind frosts, their checking action upon vegetation was greater than somewhat more severe, still frosts would have been.

MORE ABOUT PREMATURE DEVELOPMENT.

From February 13 to 23, inclusive, fruit buds made no appreciable advance; but unfortunately the warm and sunny days which followed caused a resumption of premature development. By the end of the month Gooseberry bushes in sheltered situations were green with young leaves, and the blossom buds were showing. Some Plum buds were bursting, and the fruit buds of early Pears were showing the clusters of blossom buds in compact form. Even some Apple buds, notably those of Golden Spire, and to a less extent those of Beauty of Bath, were beginning to burst on the last day of February, or about six weeks earlier than they have been in my orchards in any previous season. The most forward of these Apple buds only just showed the tips of the leaves which will surround the clusters of blossom buds. Such a stage is sometimes weeks ahead of the expansion of blossom, and it is to be hoped that this will be the case in the present season. Reference was made last month to the appearance of the female blossoms of Cob-nuts on January 25. Those which were showing when the frosts occurred are injured, if not killed, as they have become brown. Myrobalan was off blossom at the end of February, and green with leafage, while the Quince was in half-foliage. The mistake of my carter in calling Myrobalan "Morella Cherry" was explained on p. 138 (March 1), though unfortunately a stray line from another article got into the middle of the correction, making what printers call "pie" of it.

Lilac leafage was one-quarter out on February 28, that of the Elder being half out, and the Flowering Currant was approaching the full beauty of its bloom. Forsythia and Barberry were in full blossom at the same date, and some Provence Roses were showing blossom buds.

It is sad to have to dread sunshine, because a few days of it would cause the blossoms of Plums and Pears to expand. I have never seen a better show for Plums than there is at the present time; but it runs a very serious risk of destruction.

WINTER-SPRAYING.

It is a comfort to have got through the tedious work of winter-spraying. All my Apple, Plum, and Pear trees have been profusely treated with lime-sulphur. It was done a little earlier than usual, because the buds were extremely forward, and even so a row of Golden Spire Apples was done before I noticed that the buds were bursting. It will be interesting to see if any damage results. Winter spraying with lime-sulphur is expensive, because one gallon of even a strong solution makes only 13 gallons of wash, and it is desirable to wet trunk, branches and twigs thoroughly. When this is done moss is cleared off the trees by this wash, as well as if caustic soda were used. The stuff sticks on the trees remarkably well, and where some of it was applied as long ago as January 7, to keep birds from eating Plum buds, the trees are still bluish white with it, and the birds have hardly touched a bud since the spraying was done. To the credit of lime-sulphur it must be said that it is very cheap for a summer wash; for, instead of diluting a strong solution in the proportion of one to twelve of water, as in winter, it is diluted one to forty.

A "WRINKLE" IN PRUNING.

Mr. R. F. Browne, of Sligo, in a letter to the *Fruit Grower*, calls attention to an excellent plan of preventing waste growths of Apple shoots, which he adopts in winter pruning. Finding that the growth from the bud next below the one pointing outwards over which he cut for extension growth came stronger than the growth which he desired, he tried the plan of drawing his knife across at the base of this second bud, with the idea of killing it, as the shoot from it would be an internal growth, and would have to be cut out in the next pruning, after causing much waste of the tree's energy. He was pleased to find that the great majority of buds so treated, instead of dying, developed into fruit buds or spurs containing fruit buds. Thus he gained doubly by his plan, preventing useless growth and increasing the development of fruit buds. He points out that the plan is a substitute for summer pruning to a great extent. He believes that his plan is successful only when the undercutting of the buds is done in the spring, when the sap is rising freely.

EXTENSION OF GOOSEBERRY MILDEW.

American Gooseberry mildew has now become a pest more serious than "big bud" in Black Currants. In Kent, for example, according to a report from the County Council, 3,353 acres were affected in February. Now, the Board of Agriculture's return of the area under Gooseberries and Currants, including some plantations only

mainly devoted to these fruits, in 1912 was 8,549 acres. Supposing that the area under Gooseberries alone is 5,000 acres, over two-thirds of it are affected by the terrible disease. Possibly one source of infection may be the use in healthy plantations of baskets which have been in diseased plantations. I suggest, therefore, that empties should be filled outside the plantations, the fruit being picked into other receptacles, and carried out of the field to fill the baskets.

Unfair Competition.

According to Mr. J. R. Campbell, of the Irish Department of Agriculture, farmers in Ireland are now planting fruit trees by the hundred acres, helped by loans from the Department, which need not be repaid until the trees have come into profit. Surely it is unfair to growers who have to provide their own capital and to bear the losses of years before the trees planted pay expenses, to start new competitors in business with national funds. Established growers, as taxpayers, have to contribute towards the funds thus used to their injury.

Planting Maidens.

In Kent at least the practice of planting Maiden Apple trees has come into general favour. That this is good policy, when a grower purchases his trees, I have no doubt, but only because it is difficult to get satisfactory two-year-old trees. When I raise my own trees, as I have raised the great majority planted in my orchards, they have been left in their nursery beds until they were two years old. When they were maidens, however, they were topped just above the height at which it was desired that they should send out branches, the result being the growth in the second season of vigorous shoots where they were wanted. When trees are so treated, two-year-old trees, in my opinion, are greatly preferable to maidens for planting. But nurserymen will not so treat their trees intended for half-standards. They say that they would not be able to sell them if they did so. They leave the trees to grow wildly all through the second season, the result being in most cases the production of lanky things with all the best side shoots 6 feet from the ground level, while by far the most vigorous is a central growth, which must be cut out. The trunks below the lofty side shoots are often studded with fruit spurs or covered with almost lifeless wood buds. The only course for the planter to pursue with such trees, if he wants low half-standards, is to cut the tops off below the side shoots, trusting to latent buds to form heads for the trees; but this is unsatisfactory, and when I buy trees in future, they will be maidens, which can be treated properly before they grow any older.

Deferring Cutting Back.

The results of deferring the cutting back of a row of purchased James Grieve Apple trees, two years old, have been noticeable in pruning them recently. The trees were planted in November, 1911, three adjoining rows being taken for the trial. The first row was cut back immediately after the planting, the second being left uncut, while the third was cut back in the April following the planting. No difference was noticeable in the growth of the trees in rows 1 and 3, which was fairly good; but those in row 2 had developed an undesirable number of fruit buds, so that it was necessary to cut them back to wood buds close to the trunks. Most of the trees in this row had a strong central growth, which absorbed nearly all the energy of the trees during the last growing season, and many of these central growths were covered with fruit buds, as well as most of the laterals. The waste of energy involved in leaving the central growths for a year is obvious, as they had to be cut out in the recent pruning, except where they had good wood buds at the height desirable for branching, in which case the side shoots were cut off, leaving the central growths to form fresh heads. These results confirm those of a similar trial with Lord Grosvenor Apples a few years ago, except that those trees, raised by myself, had no wasteful central growths. *A Southern Grower.*

FOREIGN CORRESPONDENCE.

NOTES FROM SOUTHERN ITALY.

Some years ago I received from a friend a few roots of a native Pæony, and some seeds of an Abies from Sicily. The Abies was described as a new species (Abies nebrodensis Natt. *Boll. R. Orto Bot. Palermo,* vol. vii., 1908). A single large specimen was found on Mount Cervo—the last survivor of an extensive forest which existed there in past years. It may be considered as the western form of Abies cephalonica; only a few plants have ever been cultivated, and I believe that this single specimen is the only indigenous one now remaining. The Pæony which my friend sent me was not the native P. corallina Russi, with large purple flowers, but P. corallina var. flavescens Guss (this name was given me by the authorities at Kew). It is the earliest species of all; this year the flowers were open on the 18th of February. The single blossoms are white, tinged with pink, deepening towards the edge. The large white ovary and blood red style, with stamens of citron yellow, add to the attractiveness of the flower; the leaves are broad and dark green, while the base of the stem is brownish purple. This Pæony is certainly not so handsome as the other single varieties, but as the earliest it claims a certain amount of attention. The fruits, too, are very ornamental, and last during the whole autumn. Indeed, I have had specimens in good condition at Christmas. Iris tingitana is a sparsely-flowering species in the north, the cause being the insufficient ripening of the bulbs. The best way to overcome this difficulty is to take up the large bulbs each year, and dry them in full sunshine, afterwards planting them in pots, so that they may be protected in the spring from frosts. They do very well in pots; there is a fine group of this Iris now in flower in the Royal Gardens at Naples, all in pots plunged in the ground. After the flowering period the bulbs should be planted in the open in the sunniest place available. The blue Iris reticulata Nelusini is now in full flower. Seedlings taken from this variety are very seldom true; the colours produced include every shade, from white through porcelain blue to dark purple. All, however, are very fine and exceedingly attractive. Tulipa turkestanica is now over. It has flowered here for a very long time, and is the first to blossom. The second of the typical tulips is T. saxatilis, rosy-red with a yellow eye, and three or four flowers on each stem, the leaves grass-green. Tulipa Greigii is now in bud, and in a few days this king of Tulips will be in full splendour. The other day I collected some specimens of the little Crocus biflorus in the neighbourhood of the Soltara, and had the good fortune to find two bulbs of the white variety, in size and shape true to type, the colour only being different. I am not sure whether this is not the first time that the albus form has been found. *Willy Muller, Naples, Italy.*



Photograph by R. A. Malby.

Fig. 68. MATTHIOLA PEDEMONTANA IN THE PONT DE NANT BOTANIC GARDEN, SWITZERLAND.

(See page 152.)

The Week's Work.

FRUITS UNDER GLASS.

By JAMES WHYTOCK, Gardener to the Duke of BUCCLEUCH Dalkeith Palace, Midlothian.

FORCED STRAWBERRIES.—The earliest plants of Strawberries which have set their fruit may be placed on a shelf in a house with a mean temperature of 60° to 65°, increasing 10° during sunshine. The house must be one in which there is a fair circulation of air; the close damp conditions of a plant stove is not suitable. Where there is no house devoted to Strawberries a Vinery or Pine Stove may be used, keeping the plants near the roof glass. At this early period saucers under the pots are not absolutely necessary; it is preferable to stand the pots on pieces of turf. A twig support should be given to each fruit stalk, or for a row of plants run a twine cord along the shelf, fixing it to a short stake about every sixth pot. Thin the fruits so that they may grow to a useful size. Guard against giving either too little or too much water at the roots, and use manure water every alternate time, until the fruit changes colour, when clear water only should be given. Syringe the plants every afternoon to prevent red spider, particularly if they are in a Vinery or Peach House. Fumigating with nicotine will prevent green fly, but should not be employed when the plants are in flower. After cleaning the pots, taking off decayed leaves, thoroughly syringe the remainder with an insecticide, give the plants a top dressing of soil mixed with manure, and place them in a house with a temperature of 50° to 55°. Keep them near the roof glass, and when they throw up flower spikes keep sufficient warmth in the house to afford a constant circulation of air; 55° at night and 65° during a sunny day are suitable temperatures. As the season advances the soil dries quickly, and more frequent attention must be given to watering and to the prevention of insect pests. No fumigating must be done, however, while they are in flower.

EARLY FORCED VINES.—Until the earliest Vines have passed the stoning period, they should not be forced with fire heat. During cold nights 60°, milder ones 65°, and in sunny days, 80° will be suitable. A moist atmosphere must be maintained, and a sprinkling of manure water on the paths and border in the evening will be advantageous; at the same time a close, stagnant atmosphere must be avoided. Excessive moisture on early bright mornings, especially if there is a cold cutting wind, is most harmful; and injudicious ventilating under such conditions will cause scalding, both of foliage and fruit. Moreover, an over-moist atmosphere in dull weather, when the vinery cannot be properly ventilated, will cause excrescences on the under sides of the leaves; it is therefore desirable that in the early morning the air in the house should be dry. Pot Vines in the fruiting stage require constant attention and watering. If plunged they do not dry so quickly, and should therefore be mulched, and frequently watered with manure. Remove any growths tending to crowd the foliage, at the same time retaining the main leafage in a clean healthy state. In the event of red spider appearing, sponge the foliage with an insecticide. In succession vineries, where the Vines are in active growth, constant attention for a time must be given to removing superfluous growths and bringing the shoots retained to the under side of the roof trellis. In the case of young Vines just come to a fruiting stage, the roof trellis is occupied with comparatively little of the fruiting wood, and the spur system should be adopted. The side shoots to be retained for fruiting should be about 18 inches apart, and should be allowed to grow to at least two joints beyond the bunch. When the leading shoot has grown half the length of the vacant rafter, it should be stopped, and the bud which first comes after stopping removed, for the second bud will grow much stronger than the first. Young Vines are very fruitful, and overcropping must be avoided. To make the best use of a newly planted vinery, plant as many supernumerary as permanent vines; the supernumeraries can be heavily cropped for a year or two and then cut out. By that time the permanent Vines will be well established. As these Vines come to the flowering stage, keep the mean temperature about 65° or 50° in sunshine, with a free circulation of air and sufficient moisture to prevent an arid atmosphere.

THE ORCHID HOUSES.

By W. H. WHITE, Grower to Sir TREVOR LAWRENCE, Bart., Burford, Dorking.

ONCIDIUM.—Such plants as Oncidium macranthum, O. lamelligerum, O. monachium, O. serratum, O. superbiens, O. Loxense, O. corynephorum, O. Kienastianum, O. zebrinum, and others of this section will now require repotting, but any plants which are sending up their flower spikes should not be disturbed yet. The rare O. Claesianum is now flowering, and the spike, owing to its great length, will require constant attention and training. These Oncidiums do not retain their roots for any length of time in a hard or compressed material, therefore the compost (Osmunda fibre, coarse fibrous peat and Sphagnum moss in equal parts) should be made as open as possible. When potting it is advisable to avoid a hardness which prevents water from passing rapidly through the whole mass of the compost. Pots of moderate size should be employed and thoroughly well drained. If a plant should be in a sufficiently large pot, and the compost be in a poor state, the latter may be picked out, and the roots resurfaced with fresh material. The plants grow freely at the cooler end of the Odontoglossum house, also upon the centre staging raised well up to the roof glass. At this season, with fine weather they will need plenty of atmospheric moisture around them, and the aërial roots of the tall growing varieties as O. zebrinum, O. Claesianum, etc., will require syringing several times a day. Some species, as O. macranthum, O. superbiens, and O. serratum, send out a large number of long, fleshy roots, and it is advisable not to allow these to ramble about in the air, but to guide them carefully down into the soil. Examine the plants frequently, especially at night; slugs and small snails cause irreparable injury to the tender roots and flower spikes. Odontoglossum Edwardii, O. Lindenii, O. ramosissimum, and the new O. ramos-Edwardii are all strong growing plants, and are very similar in habit and mode of growth to the above-mentioned Oncidiums, requiring the same kind of treatment. Oncidium incurvum will henceforth require copious waterings until the flowers open. O. ornithorrhynchum and its delicate variety album have already commenced to grow, and as the young growths push out their fine roots when only a few inches high, no time should be lost in affording them fresh material. This species roots very well in a mixture of Osmunda and moss, both materials cut up rather finely. Plants of Oncidium concolor that are sending out flower spikes will need abundance of water until the flowers open. The strong growing O. leucochilum and its variety maculatum are also sending up flower spikes, and require plenty of water. Plants which have made large pseudo-bulbs and are producing big branching spikes of bloom should be relieved of the spikes soon after the flowers have opened; if retained for too long a time the plant will not readily recover from the strain. The warm growing O. ampliatum should now be removed from its resting quarters to the more genial atmosphere of the plant stove, or East Indian house, affording enough water to keep the roots moist. Wrap a piece of wool around the base of the young spikes to protect them from cockroaches, etc., and the same treatment should be given also to O. Cavendishii. The distinct O. Lanceanum will now be starting into growth, and will require watering a little more frequently than for several months past. Plants of this species that need repotting may now be attended to. They root freely in rather coarse Osmunda fibre, and being in this very porous material, it is almost impossible to give them too much root moisture whilst growth is being made. The plants here are suspended with the tips of their leaves nearly touching the roof glass on the east side of the Cattleya house. The rare O. hæmatochilum is found in its native habitat growing with O. Lanceanum, and in cultivation will require the same treatment.

THE KITCHEN GARDEN.

By JOHN DUNN, Foreman, Royal Gardens, Windsor.

ONIONS.—Plants which have been raised in heat should now be ready for pricking into boxes of fine soil, consisting of three parts rich loam and one part decayed cow manure, with a sprinkling of rough sand. After being sifted and thoroughly mixed, the compost should be pressed carefully into boxes. Great care must be taken that in lifting the young plants from the seed boxes the roots are not injured. After transplanting, the pit should be kept close for a few days until the plants make fresh roots, and then air should be admitted to keep them from becoming drawn. Water must be given sparingly at first until root action commences, but the plants may be syringed twice daily in fine weather.

PEAS.—Young Pea plants raised under glass for planting on a sheltered border must be aired freely for some time in order to harden them thoroughly before they are planted out. The soil should be thoroughly watered, and a number of small sticks placed around the pots to keep the plants in an upright position. Shelter from rough wind must be provided as soon as the plants are put out or the crop may be spoiled.

PARSLEY.—A sowing may now be made on an open border. The plants should be ready for use about the middle of May, when those sown last summer will be running to seed. Parsley is a deeply rooting plant, and requires a good rich soil. Sow in shallow drills 15 inches apart, and cover with very fine soil. When the plants are large enough to handle they should be thinned to 6 inches apart; and if very fine leaves are desired double that distance should be allowed. Parsley sown in heat early in the year should now be ready for pricking into boxes; or if box frames are available the seedlings may be hardened and pricked into a warm border to be covered by the frames which may be removed when the plants have become established. Parsley in the open should be picked over and all decaying foliage removed. The ground between the rows should be stirred with a Dutch hoe, and a slight dusting of soot may be given.

MINT.—Although this is one of our most popular herbs it seldom receives the attention necessary to ensure the best results. To grow this plant well a fresh plantation should be made every spring. Mint requires a light rich soil, into which a good supply of decayed manure has been dug. Old Mushroom dung, or manure from a spent hotbed, will suit the purpose well. When the bed has been prepared, a sufficient number of young shoots should be carefully removed from the old bed, and planted at intervals of 9 inches in rows 1 foot apart. An ordinary dibber can be used for planting. By the middle of summer these young shoots will have formed a healthy bed of Mint, and when the time arrives to lift roots for forcing they will give much better results than those which have been several seasons in the same ground. If dry weather sets in these young plants should be watered frequently until they have made a good start.

TARAGON.—This herb also succeeds best in light, rich soil, and should be planted every spring. The best way is to lift a sufficient number of healthy roots and pull them to pieces with the hand, planting only those which are healthy. Plant in rows 18 inches apart, with the same distance between each plant in the row. If the stock is short, young plants may be raised from seed, which should be sown in shallow drills and covered lightly with fine soil.

THE "FRENCH" GARDEN.

By PAUL AQUATIAS.

HOTBEDS.—Carrots are now growing well and require ample room. This can be given by cutting the Lettuces as soon as they are ready; if even a few heads are cut in each frame the growth of the young Carrots will quickly improve. No ventilation must be given while the Lettuces are in the frames, as it would check their growth and render them liable to attacks

of green fly. It will be advisable to keep the paths level with the soil in the frames by filling them with short manure within the next fortnight. This greatly facilitates the raising of the frames when more head room is needed for the Cauliflowers. Turnips as a main crop on hotbeds are always profitable, and the present is the proper time to insert the seeds. To obtain favourable results this crop must be grown without check a moderate temperature is best —say 45° to 50° Fahr.; and this explains the planting of a crop of Lettuces previous to the insertion of the seeds. They need ample light and ventilation after the appearance of the cotyledons. It is not always possible to give them the necessary requirements when sown too early and the produce is hardly marketable. The best varieties are:—Half-Long White or Early Milan Red, the latter when a flat round root is preferred. The seeds are inserted in 10 rows of 11 holes, into which two or three seeds are placed for every light. These are kept closed until the cotyledons appear; a little ventilation is then given and increased gradually with the growth. The flies from the manure often attack the young seed-leaves. An application of road dust or finely-sifted ashes will be sufficient to check any further damage.

Hotbeds for Cloches.—As much time as possible should be given to the removal of all decayed leaves among the clôches on hotbeds. The aperture under the rim of the clôches must be kept open. The beds should be covered at night, when necessary, especially after a bright, warm day, as the temperature during a cold night is too low to admit of the free growth of Cos and Cabbage Lettuces.

Unheated Frames and Cloches.—Ventilation in the frames and clôches in which Lettuce "White Passion" is grown must be carefully attended to if a sturdy, steady growth is to be maintained. The variety "Little Gott" of a tender, rather fast growth, will require careful attention in the cold beds, and these must be covered when a frost threatens. In bright weather, if the soil is in good condition, a light watering every week will be advantageous. Most of the Cauliflowers are now removed from their winter quarters to be planted out on the hot and cold beds. The soil in the frames is dug and raked over and a crop of Turnips is sown as explained before. These make a useful succession to those sown on hotbeds, at a time when the supply is generally short.

Melons.—The first batch is now ready to be potted in 3-inch pots filled with good loam. They are left in the greenhouse; or, if sown on hotbeds, are plunged in fresh soil made a few days previously to potting. The bed is carefully covered at night, and also sheltered from winds with mats. A little ventilation is always given for half an hour in the middle of each day. The first seeds of the main batch are sown now, to be followed by two other sowings with an interval of one week between each. It is essential that a young and fast-growing crop be always in hand.

THE HARDY FRUIT GARDEN.

By B. Goodacre, Gardener to Sir Ernest Cassel, Moulton Paddocks, Newmarket.

Figs.—The present is the best time of year for planting Figs out-of-doors. The position chosen must have a southern aspect and a perfectly drained, warm border. In the South of England Figs will sometimes do well planted in the open as standards, but it is nearly always essential to plant them against a south wall, in a well-sheltered corner. One is practically restricted to a single variety for outside culture—the well-known Brown Turkey. This is by far the most prolific of all Figs, and one of the hardiest; when in condition the flavour is all that can be desired. If the border is not already sufficiently drained, the whole of the soil should be removed to a depth of 3 feet. The surface soil should be turned back, and the subsoil replaced by a good 8 inches of rough drainage. To the top spit must be added a quantity of brick and old mortar rubble; this stiffens the otherwise rather sappy growth, making it sturdy and fruitful. When planting, the roots must be kept as near the surface as possible, spreading them out in ray-fashion. Make a firm bed on which to lay them, and sprinkle a little well-rotted leaf mould over them to the depth of an inch before covering. This will encourage early root action. In pruning the Fig the chief aim must be to clothe the whole space thinly with well-ripened stocky growth. On old trees the most fruitful wood will be found at the top, and should in every case be well thinned, otherwise it will become so clothed with foliage as to overshadow the young growth below, causing it to become sappy and unfruitful. In no case must young wood be shortened, as the fruit is always found near the point, and shortening will cut away the crop.

The Grape Vine.—Although not generally grown out-of-doors there are a few varieties of Vines which will be found to crop and ripen their fruit in a favourable season. The chief of these is the Old Royal Muscadine. Even when this grape does not come to maturity it may be used for making a most excellent wine. One of the chief differences between the culture of outdoor Vines and that of those under glass is in the matter of pruning. They should never be restricted to one eye. The bunches will be nearly always found formed two or three eyes from the main rod. It is a good plan to lay the main rod in a horizontal position about 3 feet from the ground, and from this the young rods may be run up every season at a distance of 2 feet apart. These rods may be stopped when they have reached a length of 5 feet, and have become well ripened for fruiting the next season. If this plan is adopted the rod which has borne fruit during the current season must be cut back to a few eyes every year. It is a good plan to cut away these rods immediately after the fruit is gathered, thus allowing more air and sunshine to reach the young fruiting rod for the coming season. Attention must be given throughout the season to stopping and pinching, allowing all available sunshine full access to the plants. Lack of attention to these details is the chief cause of so many failures to ripen both the crop and the wood for the ensuing season. If the advice given as to the position and planting of the Fig is followed in the case of the Vine, it will be found satisfactory. A few rough bones should be added to the planting compost, and then not quite such a liberal addition of mortar rubble is necessary.

PLANTS UNDER GLASS.

By F. Jennings, Gardener to the Duke of Devonshire, Chatsworth, Derbyshire.

General Work.—Codæums [Crotons] and Dracænas that were struck and ringed early as previously advised should be rooted through the moss by this time; they should be transferred into 60 size pots and placed as near the glass as possible on a shelf in a stove or cucumber house. Pot in a compost of fibrous loam, peat, and leaf-mould, and add a little fine wood ashes or charcoal. Water them well as soon as they are potted. Cordyline indivisa, either grown from seed or taken from old plants, makes a most effective decorative plant and when too large for ordinary indoor work is suitable for vases outside. Early batches of Celosia should now be ready to pot, and should be placed as near the glass as possible in a warm frame or hot-house. When potting Celosias in final pots, it is not necessary to keep the ball of the plants near the surface; the stem may be well buried, but care should be taken not to press the soil too hard around the base of the stem. Pot in a compost of loam and leaf-mould in equal parts, with some coarse sand and rotten cow manure. To grow Celosias well it is essential to avoid a check in potting, or allowing the plants to become too full of roots before shifting into the flowering pots. In this latter case the plants bolt into flower before they have reached their maturity. Early batches of Begonia Gloire de Lorraine may now be taken. The best cuttings are those from the base of the plant. These should be inserted in coarse river or silver sand, in a propagating pit, or hotbed, under a bell glass, or a box with glass over the top. Give the plants a good soaking of water, and keep them close until they are well rooted.

Tree Carnations.—As each batch becomes ready for potting from thumb pots, they should be transferred into 4½-inch size, and those plants already established in 4½-inch pots should be afforded more air daily, and given a night temperature of 57° to 60°. Keep a sharp look-out for green fly and other pests.

Centropogon Lucyanus.—Cuttings of C. Lucyanus may be inserted, 3 cuttings to each 60 size pot. The soil may be composed of loam, leaf-mould, and sand in equal parts, and the plants should be grown under a bell glass. They are a great acquisition in December, their bright scarlet flowers making a pleasing effect at a dull time of the year.

Salvia Pitcheri.—Cuttings of S. Pitcheri for autumn flowering should now be inserted. This beautiful blue Salvia is a great acquisition to any garden and is of easy cultivation. Cuttings should be inserted 3 to a small 60 size pot in ordinary cutting soil, and placed under a bell glass or frame in a gentle bottom heat. When rooted they may be hardened off on a shelf in a warm house, and when ready, can be shifted into 48 size pots. Pot finally in a 24, or larger if required, and grow in a greenhouse; or, if in the south, stand out of doors to harden. They should flower in a temperature of 55° to 60°. Salvia Bethellii can be treated much the same way; it is a pretty rose-coloured Salvia, but not so effective or so useful as S. Pitcheri.

THE FLOWER GARDEN.

By Edward Harriss, Gardener to Lady Wantage, Lockinge, Berkshire.

Pruning Trees and Shrubs.—This work must now be brought to a close, so that all vacant ground in the shrubberies may be dug up and made tidy. In pruning, the natural habit of the various species must be taken into account, so that the shrubbery may not present too "clipped" an appearance when finished. Shrubberies which have been planted in recent years may have become too crowded, necessitating the removal of some of the plants elsewhere. Some of the remaining plants will then require rearrangement. Plants which are supported with stakes must be examined; it may be that some of the stakes and ties require renewing. Climbing plants must be pruned and trained, if this be not already done, as the growth on some of the plants is very forward. Clematis must be very carefully handled, or the tender shoots, (which are now 18 inches long) will be damaged. The habits of the various species of climbing plants must be carefully studied in carrying out this work. In most cases they should be liberally thinned or pruned—Ivies, for instance, are nearly always allowed to become too dense. If, when in a young state, the shoots of Ivies were thinned to 1 foot apart, the true climbing habit of this plant could then be seen to more advantage. Ivies covering the stems of trees should be severely dealt with in the matter of thinning. They should not be allowed to reach a height above the lower set of branches, and it is not desirable in all cases to encourage Ivies even to cover the stems of trees. Climbing plants should receive an annual top-dressing of some stimulating material; Roses especially should be liberally treated in this matter. The old soil should first be removed down to the roots, replacing it with rich loam and well-rotted manure. The young shoots must be examined for traces of aphis, and syringed with an insecticide, as soon as they appear. It is a good plan to syringe Climbing Roses periodically with a solution of soft soap and sulphur; this would keep in check both aphides and mildew.

Tuberous Begonias.—The tubers which have been resting in a cool, frost-proof shed since the autumn must be brought out and started into growth. Lay them closely together in moist leaf-soil in shallow boxes, and place the boxes in a moist, warm house until growth commences. They may then be either planted out in frames on a mild hotbed in a compost of loam and leaf soil in equal parts, or transferred singly into pots. If the former method is adopted, the frame must be kept somewhat close until growth is well advanced, admitting air only in the morning, and closing them again early in the afternoon after spraying the plants with tepid water.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Newspapers.—*Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see.*

APPOINTMENTS FOR MARCH

MONDAY, MARCH 10—
United Hort. Ben. & Prov. Soc. meet.
TUESDAY, MARCH 11—
Roy. Inst. meet. (Lecture by Prof. H. H. Turner.)
WEDNESDAY, MARCH 12—
Clevedon & Dist. Spring Bulb Sh. N. of England Hort. Soc. Spring Sh. at Bradford. Stevenage and Dist. Hort. Mutual Improvement Soc. Sh.
THURSDAY, MARCH 13—
Torquay Spring Fl. Sh.
FRIDAY, MARCH 14—
Roy. Inst. meet. (Lecture by Mr. A. E. H. Tutton.)
TUESDAY, MARCH 18—
Roy. Hort. Soc. Comms. meet. (Lecture at 3 p.m. by Mr. R. Lloyd Praeger on "The Romance of Weeds.")
SATURDAY, MARCH 29—
Paisley Spring Fl. Sh.

SALES FOR THE ENSUING WEEK.

Monday and Friday next.—Herbaceous and other plants. Liliums, and hardy Bulbs, at 12; Roses and Fruit Trees at 1.30. At 67 & 68, Cheapside, by Protheroe and Morris.

Wednesday next.—Japanese Liliums, and other hardy Bulbs, Perennials and Herbaceous Plants, at 12; Palms and Greenhouse Plants at 5.

Wednesday next.—Fourth Annual Sale of Nursery Stock at Nineham's Nursery, Caterham, by Protheroe and Morris, at 12.

Thursday next.—Special Sale of Roses; also Fruit Trees. At 67 & 68, Cheapside, E.C., by Protheroe & Morris, at 1.

Friday next.—Imported Cattleya Aurea, and other Orchids. At 67 & 68, Cheapside, E.C., by Protheroe and Morris, at 12.45.

Monday and Wednesday.—Rose Trees, Fruit Trees, Shrubs, Lilies and Begonias. At Stevens' Rooms, King Street, Covent Garden, W.C.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich—40.8.

ACTUAL TEMPERATURES:—

LONDON.—*Wednesday, February* 26 (6 P.M.) Max. 58; Min. 49.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—*Thursday, February* 27 (10 a.m.); Bar. 29.6; Temp. 54; *Weather*—Moderate sunshine.

PROVINCES.—*Wednesday, February* 26: Max. 50 Spalding; Min. 44 Stornaway.

***Insecticides, Fungicides, and Weed Killers.**

Most text-books and treatises on Plant Pathology deal with the subject from the point of view of etiology: they describe the life histories of the fungous or insect agents which provoke disease: in short, they deal mainly with causes and only incidentally with remedies. Therefore a treatise which, like that under review, is devoted mainly to the medical side of plant-pathology is destined to find a wide welcome from those whose business it is to devise or employ remedies for diseased plants.

The work might be described as a treatise on the therapeutics of plant-pathology, for its main task is to describe the curative agents in common use and the manner of application of these agents.

The writer has taken immense pains to collect and tabulate the results of experiments in the use of a vast array of chemical agents in remedying or preventing plant-diseases. Thanks to a good index and a very full table of contents, the user of the work who wishes to know to what uses a given fungicide or insecticide has been put—and with what results—is enabled to gain the information in a minimum of time.

Further, the work will prove a boon to those who are willing—were the information available—to use preventive measures in a proper scientific, and not merely in an empirical way. For example, the careful reader who consults the pages devoted to Bordeaux Mixture (which the author prefers to call, and vainly, as we think, by its old name of bouillie bordelaise), will perceive that scorching of delicate leaves may be prevented not only by the employment of lower strengths, but also by providing an excess of lime.

Although the list of specifics is large and the account of their several uses is excellent, one serious omission calls for comment. So far as we have been able to discover from the index, no mention is made of lime-sulphur and its uses. Another defect, which is a serious one from the point of view of the expert, is the omission of references to original sources, and although we recognise that to have included a complete bibliography would have involved a great labour, we feel confident that the labour would have been fully recompensed by the enhanced usefulness of the book.

As it stands, however, the treatise may be recommended very cordially to cultivators. It is a work of reference rather than a text-book, and should find a place on the shelves of all whose work includes cludes the combating of plant pests.

The translation is generally excellent; but we have observed here and there occasional mistakes in the use of biological terms. The use of the word "evolution" (p. 2) to denote "Life History" is due probably to a too-literal translation. Chrysales (*loc. cit.*) is neither French nor English; "spores" is not the name given to the seeds of fungi; nor is mycelium "the name given to the new-born parasite." The nitrogen-fixing bacteria of Leguminoseæ live in, and not on, the excrescences of the roots. Any good dictionary would suffice to inform the translator that arrêtés are ordinances, and would have saved him the trouble of square brackets and the suggestion that "an arrêté is possibly equivalent to an Order in Council"—as Frenchmen know very well there are arrêté de mairie, arrêté de police, etc., etc. These, however, are minor matters; the essential and major part of the book is well translated, and the glossary of terms is not only admirable in its fulness, but singularly free from errors.

* *Insecticides, Fungicides, and Weed Killers*, by E. Bourcart, D Sc. Translated from the French by Donald Grant, with 83 tables and 12 illustrations, pp. 450. (London: Scott Greenwood and Son.) Price 12s. 6d. net.

OUR SUPPLEMENTARY ILLUSTRATION.—Although most of the Woodruffs (Asperula) are somewhat coarse-growing, unattractive plants, some of the species are gems of the rock garden. The colony of Asperula nitida (Gussonii) shown in the supplementary illustration is growing in the Alpine garden of the Pont de Nant, Switzerland. The plants are situated in the joints of stones in full exposure to sunshine, and in very gritty soil; they flower profusely, making close little hummocks of pink. The growths are not more than an inch or two high, and consist of prostrate, much-branched stems, that are woody at the base. The leaves are dark green and shining, closely set in whorls on the short stems. The species is somewhat widely spread over Southern Europe, its habitat extending from the Pyrenees to Sicily, Albania and Greece. In the latter country it reaches an altitude of over 4,000 feet, and usually forms beautiful, close tufts growing in rocky fissures in full sunshine, covered with pink flowers that have a darker coloured eye. Greece is also the home of A. Arcadiensis, which grows in similar situations on the limestone cliffs in Arcadia. It is of a much more woolly nature than A. Gussonii, making a tuft of short, brittle stems, which terminate in heads of long-tubed, pink flowers. The hoary, woolly leaves are borne in whorls of six. Owing to its woolly nature the plant requires to be grown in a crevice with a partly overhanging rock to ward off heavy rains in winter; a piece of glass will serve the same purpose. The plant is frequently grown in gardens under the name of A. suberosa. To complete a trio of charming rock plants there is the Pyrenean A. hirta, which grows about 3 inches high, and produces capitate heads of flowers which are white at first, but change later to pink. In the lower picture is shown a colony of Globularia bellidifolia studded with the double daisy-like heads of steely-blue flowers. The Globe Daisies are pretty, dwarf-growing perennials, the larger kinds are suitable for planting in the border, whilst the smaller species are very useful for clothing rocky ledges and stony banks in the rock garden. The smaller species of Globularia are very similar in appearance, differing chiefly in size, G. bellidifolia is a native of Northern Italy, and is scarcely distinguishable from G. cordifolia. The latter species is general over the European Alps, from the Pyrenees to Macedonia, and makes a turfy mat of shrubby, much-branched stems. The dark-green leaves are small and obcordate, while the heads of blue flowers are borne on stems just above the foliage. The smallest, G. nana, a native of the Pyrenees, forms a tuft of stems and leaves close to the ground, with the same kind of steely-blue flowers just above the foliage. The largest of the family is G. nudicaulis, which has dark-green, shining, leathery leaves produced in tufts. The flowers, nearly 1 inch in diameter, are borne on naked stems about 4 inches high. This species also is a native of the Alps and Pyrenees, and in common with the others it grows best in a gritty, well-drained soil that does not become too dry in summer.

MATTHOLA PEDEMONTANA (see fig. 68).—Another very attractive plant in the interesting alpine garden mentioned above is Matthiola pedemontana. It is evidently one of the many forms of M. varia, a species that is distributed over the southern part of Europe from Spain to Greece. Nowhere is it a common plant, and, as its name implies, it is a very variable species, so much so that some forms have been given what may be termed geographical names. The typical M. varia is found in Greece and in Spain, the extreme limits of its range. It grows only in sunny situations, in very stony soil, with rambling underground stems which throw up branches at intervals. The shoots bear tufts of long, linear leaves, sometimes several close together, and numerous spicate inflorescences of light-purple flowers, each about 1 inch in diameter. A form known as M. valesiaca has smaller, livid-violet to mauve coloured flowers. This plant is found only on the Simplon Road and in one or two other localities. M. pedemontana produces light rosy-purple flowers as large as those of the type but richer in colour, and is a very decorative plant for the rock garden. During July it is a mass of flower, and the blooms last for a long time. The plant grows only about 8 inches high when in flower, but the stems elongate when in fruit. Matthiolas grow best in stony, well-drained soil in full exposure to sunshine. They are readily increased from seed or root-cuttings; the smallest portions of the underground runners will grow readily if inserted in the ordinary manner.

Scottish Horticultural Association.—On the evening of February 13 Mr. King, and new president, entertained the Council and a number of friends to dinner in the Royal British Hotel, Princes Street, Edinburgh. Over thirty gentlemen sat down to dinner, and advantage was taken of the occasion to present the retired president, Mr. Massie, with a silver rose bowl, in recognition of his services to the Association during his presidency in 1911 and 1912. The presentation was made by Mr. King, who recapitulated briefly some of the more important changes which had been brought about in Mr. Massie's time, chiefly on his initiative, and to the great amount of work he had done for the Association generally.

Testimonial to the Rev. W. Wilks.—As this fund will be closed on Tuesday, the 25th inst., intending subscribers are desired to send their contributions as soon as possible to the London County and Westminster Bank, 173, Victoria Street, Westminster, S.W.

Sir Joseph Hooker Lecture Fund.—The Council of the Linnean Society have had under consideration the application of the bequest of £100 left to the Society by the late Sir Joseph Hooker. They feel that the Fellows of the Society would not desire this legacy to be applied to the ordinary purposes of the Society, but that they would wish it to be used for some memorial of the illustrious donor in connection with the Society. It has been decided that the most suitable memorial would be an adequately endowed "Sir Joseph Hooker" lecture, to be delivered every second, third, or fourth year, and to be published by the Society. The lecture will be on some subject especially associated with the name of Sir Joseph Hooker, and the lecturer will be appointed by the Council, not necessarily from among the Fellows of the Society. The bequest of £100 will form the nucleus of a Fund to be raised for the purpose of carrying this proposal into effect. It is hoped to raise a sum of not less than £600.

Royal Society.—Two botanists, Professor V. H. Blackman and Professor Keeble, were included in this year's nominations to the Royal Society. Professor Blackman occupies the Chair of Vegetable Physiology and Pathology in the Imperial College of Science, and Professor Keeble, of University College, Reading, is editor of this journal.

Huntingdonshire Daffodil Show.—We are asked by the secretary to announce that owing to the forward season this Show will be held on April 3 and not on April 17, as previously arranged.

Appointment.—Mr. Charles W. Mayhew has been appointed Horticultural Instructor to the Northumberland County Council. Mr. Mayhew was formerly employed in the Royal Botanic Gardens, Kew.

Royal Horticultural Society.—The Council have accepted the offer of an annual silver cup from E. H. Davidson, Esq., of Borlases, Twyford. In 1913 it will be awarded in open competition at the Society's spring show at Chelsea for the "finest Cattleya, not a hybrid, in the show." The Council will not award this high distinction unless satisfied and assured that the exhibit is, in the main, due to the work and capability of the exhibitor or his employees.

Outrage at Kew.—A second and more serious outrage than that committed about a week ago (when the national collection of Orchids was damaged) was perpetrated early on the morning of the 20th ult. The large tea pavilion was burnt to the ground. Two women were caught by the police in the park adjoining under circumstances which suggested that the building had been fired by them. On being charged with the offence at the Richmond Police Court they gave the names of Lilian Lenton (aged 22) and Joyce Locke (aged 23), but refused their addresses. The pavilion had been leased by Messrs. Ewens & Son, refreshment contractors, by whom it was opened for the season on the previous Saturday; consequently the whole of their valuable stock, as well as the building, was destroyed by the fire. The amount of damage is estimated at about £1,500.

THE IDEAL ROCKERY: ITS CONSTRUCTON.

(*Continued from page* 133).

Selection of Site

The position of the rockery is of great importance because of our variable climate, and it is well always to bear in mind the evils attending the winter season.

The conditions required by Alpine plants as a general rule, in order of their relative urgency, are (1) a clear atmosphere and an open, airy situation; (2) a sufficiency of moisture in the soil and efficient drainage, so that surplus moisture may pass away as quickly as possible during the late autumn and winter; (3) sun or shade, and a suitable soil for the different kinds of plants.

The great majority of Alpine plants will adapt themselves in some degree to our climate, but certain of them require to be protected from excessive damp in winter by a sheet of glass. They require constant attention, and must be specially guarded from attacks of slugs. It must be remembered that a covering of snow protects them in their natural habitats.

Nearly all rock plants grow better where there are no overhanging trees or shrubs. If we must make our rockery under trees a small portion, at any rate, should be made to project into the open. This small piece should not be too stony, and it should be furnished with subjects that will not succeed under trees. Saxifragas of nearly all types, Sedums and Aubrietias are plants of this character. The other parts of such a rockery may be planted with grosser or more accommodating species.

In low-lying positions, perhaps near to the level of water, it is necessary for the welfare of most Alpine plants that the summit of the rockery is raised well above the level of the ground in the immediate vicinity, both behind and before.

In the sectional diagram represented in Fig. 69 the plain line XY represents the original contour of the ground.

If it is desired to make a well-drained rockery in a place of this kind—where moisture from the hill at the back is continually draining down to the water-level and along the falling ground—the position of XY must be raised as indicated by the dotted line R. Better still, first take out some of the soil of the original slope along the line L, when the course of surplus sur face water from the hill at the back of the rockery will be along the line L, which is as low as it can be brought.

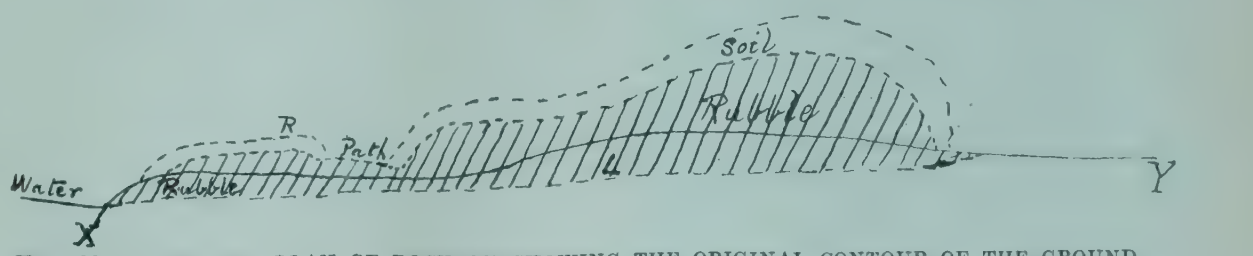


Fig. 69. Sectional plan of rockery showing the original contour of the ground.

Before finally settling on the position of the rockery, it may be well to give a thought as to what the rockerey will be like when completed. For instance, imagine a long bank facing N.E., on which it is intended to form a rockery whereon are grown Cistuses and Cape bulbs in suitable spots, in company with Alpines, having everything happy in full exposure to sunshine.

It is, of course, possible to make a number of indentations, bays and terraces on which to plant sun-loving species, and leave plenty of room to spare.

But with a little more labour, a good-sized South face might be made by cutting deeply into the bank at C and D and carrying the soil out to form an arm of rockwork F, as indicated in Fig. 70. Or, if it is preferred not to interfere

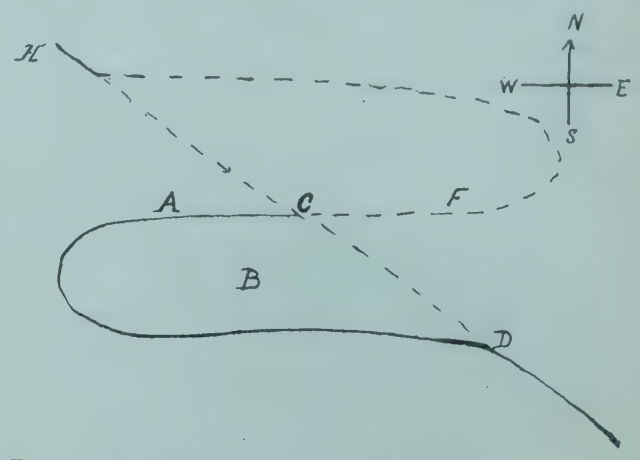


Fig. 70. Method of obtaining a projecting "bluff" in the rockery.

with the line of the bank for other reasons, the rockery may be considerably heightened towards and perhaps beyond H by distributing the soil from B around that point, so as to obtain a large piece of sunny rockery with only a little North exposure to balance it. This would possibly commend itself as the better plan, inasmuch as the back of the sunny slope H might form the back or North of the rockery and be clothed with perfectly hardy and suitable Conifers.

The whole arrangement is merely one large indentation, and the chance by which a poor rockery site of this nature might be made into a good one by some such simple means is often overlooked. *J. W.*

(*To be continued.*)

GARDENERS' ROYAL BENEVOLENT INSTITUTION.

SPECIAL APPEAL TO GARDENERS.

We print below the text of a communication which Sir Harry Veitch has addressed to eight thousand head gardeners on the subject of the charitable Institution of which he is Chairman and Treasurer. We commend Sir Harry Veitch's letter to the earnest and sympathetic consideration of our readers, believing that the appeal of one who has laboured so long and so faithfully on behalf of the Institution will not be made in vain.

March 8, 1913.

Dear Sir,—I am very anxious to induce more of my brother gardeners to give a generous support to the Gardeners' Royal Benevolent Institution, which is doing such admirable work in providing, so far as its means allow, annuities for those who are necessitous and past work (also heir windows), and in giving assistance to deserving cases in temporary distress.

I appeal to you, therefore, with all my heart to become a subscriber, should you not be one already, and if you are a member, then to do your utmost to induce others to follow your example.

It is very sad to think how many deserving applicants have to wait, sometimes for years, for

that help of which they stand so much in immediate need, and which they cannot receive at once in consequence of the want of sufficient funds, and it is in order to try and remedy this that I now make my appeal to you.

I annex a few particulars about the work of the institution, and I venture to point out to you that if in God's good Providence you may never have to seek its help you will, by contributing and doing all in your power to induce others to join, be assisting those who have been less fortunate than yourself in the battle of life.

The head gardeners of Great Britain are said to number upwards of ten thousand, and it is indeed sad to think that of that number only about one tenth are at present supporters of an institution the work of which is carried on for their special benefit. I shall be most thankful to you if you will now help to remedy this state of affairs.—I am, dear sir, yours very faithfully,

Harry J. Veitch,

Treasurer and Chairman of Committee.

P.S.—I have great pleasure in adding that Leopold de Rothschild, Esq., C.V.O., has most kindly consented to again occupy the chair at our 74th anniversary festival dinner, which will take place on June 25 at the Hôtel Metropole, London. In view of this I enclose a collecting card, hoping you may be able to obtain some contributions to be added to his list.

A few important facts about the Gardeners' Royal Benevolent Institution :—

1. The Committee of Management consists of 36 members, of whom one third must be country members and one third practical gardeners. No member of Committee receives any remuneration, all work being entirely voluntary.

2. The pensions, which are for life, are £20 per annum for men and £16 for widows.

3. Special help is given from the Victorian Era Fund to candidates whilst waiting for election who have previously been subscribers, and assistance from the Good Samaritan Fund is afforded to any deserving applicant, irrespective of age, who may be in temporary distress.

4. Every gardener, whether he has been a subscriber or not, is eligible for the pension should he unfortunately require it.

5. To be eligible for the pension the applicant need not be entirely without means, rule 3 section 8 allowing an income from any other source not exceeding £30 a year, the aim being to assist those who have endeavoured when in health to make provision for old age.

6. To candidates who have been subscribers 100 votes are given for each year's subscription of 21s. Consequently, if a gardener has subscribed 30 years he, on becoming a candidate, is credited with 3,000 votes, by which his election is assured. Therefore, for £31 10s. subscribed, the pensioner receives £20 a year for his life, and his widow, if eligible, succeeds him without election and receives a pension of £15 a year.

7. At the last election there were 67 candidates, some of whom had been hoping for the much-needed pension for several years past. Only 24 were so fortunate as to be elected, the state of the funds not admitting of more. It seems difficult to believe that so modest a sum as 21s. a year cannot be spared for so excellent a cause.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

TESTIMONIAL TO MESSRS. ADNITT AND NAUNTON.—The recent resignation of Messrs. Adnitt and Naunton, Hon. Secretaries of the Shropshire Horticultural Society, after a period of thirty-eight years of unbroken and gratuitous service, demands some tangible recognition, not only from the members of the Shropshire Horticutural Society itself, but from that far wider section of the community which includes exhibitors, judges, horticulturists, and all those who are interested in any degree in the culture of flowers, fruits, and vegetables. The undoubted success of the annual shows has been due in a great measure to the indefatigable exertions and the unvarying kindness and courtesy of Messrs. Adnitt and Naunton to exhibitors and all others connected with the undertaking. A taste for horticultural pursuits has thus been engendered and fostered among the many thousands of visitors who have annually attended the Society's exhibitions. Messrs. Adnitt and Naunton were amongst the original promoters of the Society in 1875, and from an unpretentious beginning it has gone on from year to year with a record of unqualified successes, until it has now attained a pre-eminent position in the world of horticulture. As instancing the esteem in which these gentlemen are held by the leading horticulturists of this country, it may be mentioned that the Royal Horticultural Society has conferred upon them the greatest honour in its power, viz., the Honorary Life Fellowship of the Society. A very rare honour has also been paid them by the presentation to each of the Veitch Memorial Medal. A fund has been initiated with a view of presenting both gentlemen with a testimonial.—*N. F. Barnes, W. G. Brazier,* Hon. Secs. [This most appropriate appeal is signed by about sixty well-known horticulturists.—EDS.]

SELF VERSUS CROSS FERTILISATION.—In the "Leader" (*Gardeners' Chronicle,* February 22, p. 120) occurs the sentence: "We know from Darwin's experiments that continued self-fertilisation results in certain cases in a striking reduction in the number of seeds." If we substitute "abundance" for reduction it would be equally true; as for "Hero" in Thomœa, the white variety of Mimulus, and others mentioned in his *Cross and Self-Fertilisation of Plants,* his first conclusion was that "Nature abhors self-fertilisation," but he withdrew it after studying H. Müller's book on *The Fertilisation of Flowers.* Secondly, when I drew his attention to the fact that his experiments were almost invariably made with conspicuous flowers already *adapted* for crossing, and neglected inconspicuous ones, as of Chickweed, Shepherd's Purse, Groundsel, etc., which are as habitually self-fertilised, he admitted the omission. But these and many others are most prolific, and if allowed to multiply in a garden will utterly smother the garden plants sown, as I have witnessed in a garden neglected from May till July when the place was sold. Thirdly, in almost all of his experiments they were continued for too short a period—two or three generations only. In the case of Thomœa only he carried it on for nine years. In this he measured the heights, and the final result was that (putting crossed at 100) the mean of the self-fertilised was 81. But grouping them in three years at a time the ratios were 100 to 74.3, 77.6, 81.6, so that the self-fertilised were steadily gaining upon the crossed. Moreover, "Hero" which appeared in the sixth generation was taller than its crossed opponent, the excess rising to 1,037 : 973.16. The fertility also gave a "higher average than was observed in any other case with the self-fertilised plants." Similarly, a highly self-fertilising plant appeared among both the self-fertilised and crossed plants of Mimulus luteus. It was taller and more fertile than either, as 126 : 100, the capsules amounting to 147 : 100. Darwin concluded that "This variety seems to have become specially adapted to profit in every way by self-fertilisation" I have recalled the above few instances to remind the reader that whatever evidence in Darwin's experiments appear to favour inter-crossing, they can be paralleled by others favouring self-fertilisation. The final result appears to be that in the wild state self-fertilising plants, though *small* and often annuals, are far more prolific than those more or less dependent upon insects. An extreme case is exhibited by the flowers of Orchids, few of which can pollinate their own stigmas, but when they do, as cleistogamous (Phaius), or not (Ophrys apifera), they are far more prolific than the inter-crossed species. Similarly, in the desert near Cairo, where there are no insect visitors, all the flowers had reverted to self-fertilisation. (*Journal Linn. Soc.*, see *The Origin of Plant Structures,* etc., vol. xxx., p. 218, Pl. 12, 1893). In nature plant life has two "ends," one a healthy existence, the other the production of seeds. What we regard as "beauty," e.g., size of the plant, large flowers, well coloured, etc., or what we may call the "horticultural standard," is as *nothing to the plant* itself. Self-fertilising, humble weeds are far better off than they, for they are far more widely dispersed over the globe than conspicuously flowered, insect-requiring plants. All that Darwin's experiments proved was that special and careful crossing was a *temporary stimulating* process; but there was no proof that it would have been of any permanent value—that is, in a *hereditary* sense—to the plants and their progeny. I have noticed that teachers in schools, which I have examined for nearly forty years for the College of Preceptors, still persist, year after year, in telling their pupils that self-fertilisation is "injurious," and that the offspring will "die out," etc., etc. A complete fallacy! If any reader wishes to know more on this subject I would refer him, or her, to my paper on *The Self-Fertilisation of Plants,* published in the *Transactions* of the Linnean Society, with nearly 90 coloured illustrations, published in 1877. (Second Series, *Botany,* vol. 7, p. 317.) *George Henslow, Danehurst, Branksome Wood Road, Bournemouth.*

MORAINES.—I was much interested in a short article on "Moraines" from the pen of M. H. Correvon, which appeared in your paper a little while ago (see p. 263). I am sure the many alpinists interested in this branch of the art would welcome a longer series of articles on the same subject. It would not only be interesting to have fuller lists of plants growing in the two types of moraines mentioned in the October 5, 1912, article, but also to have some information on the following points:—(*a*) The influence of the size of stones comprising the moraine on the flora—*e.g.*, it seems to me that species which would grow in a moraine of fine particles bordering on, but not exactly, silt, would not necessarily grow in coarser stuff, say, ½ inch to 1 inch stones and larger, and, vice versa, species growing in very coarse moraines, say, with blocks the size of one's fist or larger, would not necessarily grow in fine stuff. If there is a difference, an indication of the species or genera affecting these types would be invaluable. (*b*) The question of sun and shade in moraines. At present I think all artificial moraines are in full sun, but perhaps in nature there are moraines in full shade, and a note on their flora would again be helpful. (*c*) The question of water supply. I suppose that in the Alps all moraines have water running through them at varying depths; but I think there will be big differences between the flora of a moraine with water several feet deep and one in which it is an inch or less below the surface. If there is such a difference, lists of plants, suitable for either type, would be invaluable, for I think in the latter case we should need a water supply, even if not so near the surface as in the Alps. Of course, these points may be very ridiculous, but not having visited the Alps, I simply attack the point from a desire to obtain as much knowledge of this phase of gardening as possible. If the points are reasonable, many who, like myself, have not visited (and may never see) the Alps, would be delighted with further articles on the subject. *E. B. Anderson, M.Sc.*

PERPETUAL CARNATIONS AND MENDELISM.—In his remarks upon the Perpetual Carnation and its relation to Mendel's Laws of Heredity, it is fairly obvious that Mr. Lawrence J. Cook has completely overlooked the most fundamental principle in regard to them. Mr. Cook says that if the student of Mendelism, upon applying his system to Perpetual Carnations, ever comes to the conclusion that the great naturalist's theory does not apply to Carnations, it will be because the first superficial examination of the results of crosses between Perpetual Carnations do not appear to conform to any great extent with Mendelian ideas; and to this he adds the proviso, "if one confines one's attention to the flowers of resultant seedlings." In illustration of this statement, Mr. Cook instances the results of six crosses from his pedigree book, omitting, be it carefully noted, the fairly high percentage of singles obtained as a result of such crosses. The first question the careful student of Mendelism would likely ask would be one concerning the character of the parents used by Mr. Cook. Were they homozygous? Judging from the pro-

geny, the singles which Mr. Cook says he obtained and, further, "the poor flowers which one naturally obtains from Carnation seeds," it is certain that the parents he has used by way of illustration are useless in any demonstration upon Perpetual Carnations and Mendelism. The results obtained from such heterozygous parents are of no value to the breeder from the Mendelian aspect, and until we have varieties of Carnations breeding absolutely true to type, in both colour and habit, there need be no attempt to try and form conclusions in regard to them upon the basis of Mendel's Laws. I cannot say anything in regard to the parental character of Perpetual Carnations, but if they exhibit the same tendencies as our modern border Carnations, it may take many years before we have a stock of parents suitable for use in breeding upon Mendelian lines. My experience with the Border Carnation, after selfing the flowers carefully with their own pollen, is that it is a most heterozygous subject, and one obtains a wide variation, not only in colour but in other respects also, from a plant of a given colour. I remember, some years ago, experimenting with the, at the time, famous Germania. Seedlings from selfed flowers showed a range of colours embracing all those found amongst Carnations, and included some of the old-fashioned Bizarres and Flakes, as well as a few Picotees. I commend the experiment to Mr. Cook. To breed such a variety as Germania down to one reproduction of yellow flowers only, exactly similar to those of the parent, would doubtless involve years of work, and yet, if one is going to work upon Mendelian lines, it must be done and, I have no doubt, is being done by workers on this particular flower. Although it is, perhaps, somewhat extraneous to the illustration of the breeding propensities of the Carnation, I might mention the case of the Potato, as the principle is, nevertheless, quite similar, so also is the case of our important garden fruits as well as a host of flowers such as Roses, Pansies, Dahlias, Begonias, Pelargoniums, Fuchsias, Gloxinias, etc. The Mendelian analysis of such subjects as I mention is practically unknown, and investigation has only reached an initial stage. For example, those engaged upon the work of breeding from certain varieties of the Potato in order to produce a homozygous stock quite recognise the long and arduous process that this will mean, but this labour is very necessary if accurate results are to be obtained. I need not go any further into the matter beyond stating that the results of Mr. Cook's crosses are of but little value to the student of Mendelism. This criticism applies to the flower colours, and, in addition, to the habit of the plant. With homozygous parents it would be expected that the question of habit would become a very simple one to the breeder, but, at present, in order to obtain a desirable character, much breeding, which would otherwise be obviated, has to be undertaken, and many seedlings have to be grown and tested before the ideal subject is secured. In a word, it simply means that, at present, the hybridist is working very much in the dark. Mr. Cook's remarks upon Cyclamen are of more importance than are those concerning the Carnation, for in this case he is dealing with a flower that almost invariably comes true from seed. Your correspondent also states that, so far as colour is concerned in the Perpetual Flowering Carnation, Mendelian results are hard to establish. Unless he is working upon Mendelian lines, how can he secure any other results? *George M. Taylor, Mid-Lothian.*

Carnation Propagation.—I cannot claim to have had much experience with the modern type of Perpetual-flowering Carnations, but I should like to relate my system of propagation some 30 to 40 years ago, as there is to me something of an unsolved mystery about it. I used boxes so deep that they could be covered with a pane of glass with a clear ½ inch between the latter and the cuttings. The rooting medium consisted of leaf-mould and sand only. The leaf-mould was collected from the woods, where it had accumulated in hollows, some of it being several years old and quite pulverised, and it was quite free from insect or fungous pests. I was fortunate enough to be able to obtain a wagon load of this material whenever I wanted it. Slips from vigorous flower stems were inserted, water was afforded, the glass put on, and paper was pasted around the edges of the glass and the box to prevent any interchange of air. The boxes were placed on the path by the front wall of a warm house, in a position where the sun's rays could not reach them, although it was a fairly light position, and where there was very little difference in the temperature. The cuttings were kept closed in this way for three weeks, by which time they had commenced to form roots. A slit was then made through the paper on all sides, and within a day or two afterwards the glass was slid along from one end, leaving an opening of about an ⅛ of an inch. The amount of air was increased gradually, until in three days the glass was removed. I was careful, when giving additional air, to do so in the evening, when the house was closed and there was no likelihood of the door being kept open. I have never been able to understand how these cuttings could carry on their healthy existence for three weeks without a fresh supply of carbon dioxide—oxygen, I imagine, could be obtained from the water, but there seemed to be nothing left in the leaf mould to decompose, for, as I have said, it was quite pulverised. If the cuttings were allowed to remain sealed up a few hours after they commenced to root, they quickly showed signs of suffering. As soon as they became sufficiently hardened they were placed in 4-inch pots, and when these pots were fairly furnished with roots, say, early in April, they were turned outside, to be afterwards shifted singly into 12-inch pots, which they completely filled, and made plants from 20 inches to 2 feet across. They were taken indoors in the autumn and given a house to themselves, where they gave an abundant succession of flowers through the winter and spring. I cannot give the exact dates of potting, etc., but I well remember that they were standing on a path in 12-inch pots when Dr. Hogg honoured me with a visit on his way to the opening of the R.H.S. provincial show at the Royal Victoria Park, Bath, in 1873. The Doctor asked me my reason for using charcoal in the compost, and he informed me what I did not know before, that plants could not assimilate charcoal. My reason for using it was to keep the soil open, the loam being very heavy. I had only two varieties that would fill the 12-inch pots; they were named Belle Rose and Beauty. I grew a white variety named Purity, which did not make such large plants, and Miss Jolliffe, a later production, could only be induced to fill an 8-inch pot. I do not know whether this system would suit the present day Carnations, but it always seems to me that they are not provided with sufficient room at the roots. I also did exactly the same thing with Tea Roses, using small shoots which had become partly hardened, and generally having a half-grown flower bud on the tip, which was cut off. These plants, too, filled 12-inch pots in one season, continually throwing up shoots stronger and stronger from the base, and they flowered naturally through the autumn and winter without much fire heat. After about 16 months from the time of striking, they were planted outside, as I could never get such fine flowers the second season, nor would they flower so naturally in the autumn, although they were more numerous when they did appear. *Wm. Taylor, Bath.*

FLORISTS' FLOWERS.

CHRYSANTHEMUM MRS. MAUD JEFFERIES.

Seeing a reference in the issue for December 4 last to Chrysanthemum Mrs. Maud Jefferies, we, as the raisers of that variety, would like to say that there should be little difficulty in recognising it as it is absolutely distinct from any other variety in commerce, and it has established itself in public favour. We believe such well-known growers as Mr. W. Wells, Surrey, and Mr. W. J. Godfrey, Exmouth, have expressed themselves as quite certain the variety in question is Mrs. Maud Jefferies, and as both of these gentlemen have had considerable experience in Australian Chrysanthemums, we should feel inclined to accept their verdict. *G. Brunning & Sons, St. Kilda, Victoria, Australia.*

DETECTION OF ROGUES IN SWEET PEAS.

For these days, when it is rather difficult to obtain pure stocks of Sweet Peas, it becomes interesting to detect "rogues" in the early stages of growth. Even before sowing it is wise to examine the seeds carefully, as wrong ones may then be detected. Round seeds among

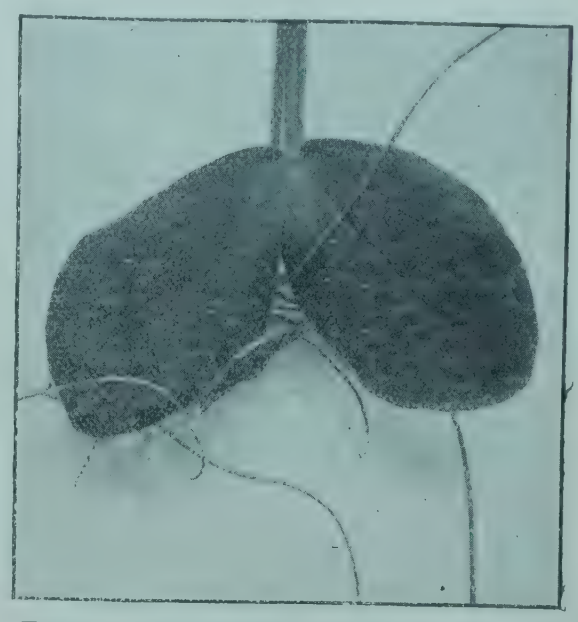
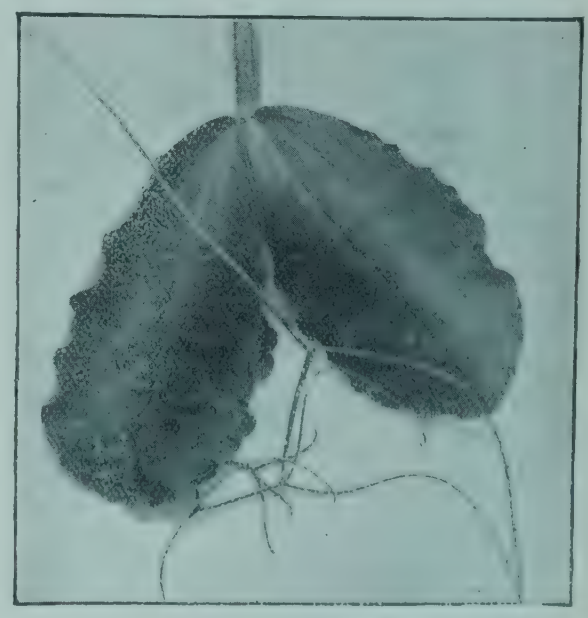


Fig. 71. Sweet Pea leaflets of the old or grandiflora type.

wrinkled ones and *vice versa*, dark seeds among light coloured ones, or light among dark are indications that stocks are not pure, and the wrong ones should be thrown away or sown by themselves. The first indication of trueness after the young plants are a few inches tall is the tendril. With one or two exceptions, all the different varieties of Sweet Peas produce tendrils which are either green or coloured. If a sowing of a variety gives plants with the two kinds of tendrils they ought to be kept separate when



[*Photograph by Messrs. Dobbie.*

Fig. 72. Sweet Pea leaflets of the waved or spencer type.

planting, especially if planting is done in clumps, as mixed clumps in the eyes of most people are unsightly. Besides character in the tendril there is now a character in the leaf. When the young plant gets into free growth the leaf indicates clearly whether it belongs to the Spencer (waved) class or to the old grandiflora class. Spencer varieties have waved or crenulated foliage, as shown in the illustration at Fig. 72, while the old type has flat leaflets. One may say these little differences are only for experts to notice, but to the general grower they are also most interesting, and now that so many start their Sweet Peas under glass such little points are easy of observation. *[illegible]*

MARKET GARDENING.

THE EVESHAM CUSTOM.

The following information on the methods of market gardening in the neighbourhood of Evesham, Worcestershire, was given by Mr. Raymond Webb at a meeting of the Farmers' Club, held at the Hôtel Métropole, London, on the 3rd inst.

Forty years ago the area under market garden cultivation in the immediate district of Evesham was estimated at about 1,000 acres. To-day it is at least 10,000 acres, and the gardening area has spread from Evesham into so many parishes in the Vale of Shakespeare's Avon that a much greater figure would have to be stated to include all the land in the district under intensive cultivation. Several causes combined account for this great development of the district. The fertility of the soil, the favourable climate of the Vale, which makes it appreciably earlier than many other districts further south, and the situation in the very heart of England, with excellent railway facilities, enabling growers to send produce to the great centres of population in all parts of England and Wales, and also to Scotland and Ireland—these, doubtless, are important causes. The great industry of the growers, who work from early morn till late in the evening in the busy seasons, and the intelligence and business aptitude displayed by many have also had much to do with the success achieved. The development was greatly stimulated during the spell of agricultural depression, when many big farms were cut up into small farms or holdings for fruit and vegetable cultivation, and Evesham became famous as a district of small holders. The majority of the growers, many of whom are now prosperous men, started life as labourers, and commenced business on their own behalf with a small area of unplanted land, usually about an acre in extent, which they cultivated in the early morning and "after work" in the evening, with perhaps an occasional day off from their other employments. Gradually they got the land clean and under standing crops, such as fruit trees, fruit bushes, Asparagus, Strawberries, herbs, etc. When the land began to bring in a more or less steady income and the cultivators had been enabled to save a little capital, they gave up regular work, worked occasionally for market gardeners, and took another piece of newly let-out land, or, more often, bargained with a neighbour for the tenant-right of a holding adjoining or near to the first holding. So a tenant from the position of a labourer would gradually progress, taking over other holdings from time to time until eventually he held, perhaps, 50 acres or more of well-cultivated land. Besides the cultivators who thus progressed from humble beginnings, the sons of the larger market gardeners have generally been brought up to the business, and have taken holdings of their own when old enough, and in the last 20 years a new class of cultivator have sprung up —gentlemen's sons with capital, who, if they have not always been successful, have stimulated enterprise and experiment, and the trial of new methods.

Now I come to the subject of this paper—the Evesham Custom, a system of land tenure based on practically fixed rents and free sale, which has given that security without which the development of the district would not have been possible. Under the system of transfer, or the "Evesham Custom," as it has been called in recent years, a tenant who wishes to realise his interest in a market garden holding finds his own in-coming tenant, and strikes his bargain for tenant-right with him direct. The landlord is not concerned at all in the question of compensation, but he has the option of declining to approve of the in-coming tenant. It is difficult to say at what period the "custom" came into being, but it has certainly been in use for upwards of 30 years. The late Mr. Edward Charles Rudge, Mr. (now Sir) Francis Darwin, the trustees of the late Captain Lord, and several smaller landlords in the district, allowed their tenants to turn over their holdings and improvements one to another, providing the in-comer was a satisfactory tenant, and it is probable that the custom originated upon these estates (which may be regarded as the nucleus of the market gardening industry in the district), and as market gardening spread to the adjoining estates the custom of transferring spread with it. The manner in which many of the now prosperous men started (as already described) doubtless had considerable influence in establishing the system of transferring. The approval of the landlord to the proposed in-comer is very seldom withheld. When it is, it is usually because the proposed new tenant is known to be a bad cultivator, or a bad rent-payer, or that he is likely to be a nuisance in some way to adjoining tenants upon the same estate. If, for some reason, the landlord does refuse to accept the new tenant whom the out-going tenant proposes, the out-going tenant usually has no difficulty in finding another who is acceptable to the landlord. In the rare event of a landlord refusing to accept all in-comers introduced by the tenant, the only course open to the tenant, if he still desires to give up, is to serve the landlord with notice to quit, and to claim such compensation as is legally due to him from the landlord direct at the termination of the tenancy.

An instance to show how the system works is as follows:—A labourer rented 3 acres of land at 30s. an acre, and planted it with Asparagus. During the three years he cultivated the land he spent about £30 in artificial manures. Then, owing to ill-health, he decided to give the land up, and he estimated that his tenant-right was worth £105 cash down. He found a grower who was quite willing to take over the holding upon those terms, and the landlord readily accepted the newcomer at the same rental. The new tenant was well satisfied, as he expected to realise an amount equal to what he had given for the tenant-right from the first year's crop of Asparagus which his predecessor had planted. The system works well in practice, and it tends to keep up a high standard of cultivation, as good, clean gardens are always in demand and command a good price.

In practice professional valuers seldom act between out-goer and in-comer, the amount to be paid for tenant-right being arrived at by bargaining, in the same manner as would be adopted in selling and buying produce.

One of the best points of the custom is that it enables a tenant to realise the value of the tenant-right at any period of the year, as the majority of landlords allow this to take place, although the tenancies are determinable by notice to quit (usually at Michaelmas). So if a man, through ill-health, old age, bad seasons, or for any other reason, wishes to reduce his total area of garden ground, or to realise the whole, he can do so in the shortest possible time—often in the course of a few hours—by the transfer of his tenant-right to an in-comer. Under this system, also, a man with sons who have helped to work the land and gradually to create tenant-right, can transfer a portion of his holding to each son as he becomes of sufficient age and experience to manage a holding of his own. The system of transfer further tends to maintain land in a higher state of cultivation than if, in order to terminate a tenancy, a notice to quit had first to expire, because a transfer generally takes place in such a short space of time that there is not sufficient time for the out-going tenant to run the land down.

In the event of a landlord giving a tenant notice to quit for default in payment of rent, or because of improper cultivation, or for any other reason, it is not at all unusual for the tenant to elect to find an in-comer himself, and for the landlord to agree to this course, subject to his approving the in-coming tenant when found, and all rent being settled up at the time of transfer. As the tenant then has usually twelve months in which to bargain with likely in-comers, he stands every chance of making the most of his tenant-right.

From the landlord's point of view the system of transferring from tenant to tenant works very satisfactorily. It relieves him of the liability to compensate the tenant directly, unless he himself requires possession of the land for his own purposes, when he must in fairness be prepared to pay by valuation for the tenant's improvements. It further relieves him of the worry, expense, and, in many cases, the friction attendant upon a valuation, which, after all, unless he himself requires possession, is only being made by the landlord on behalf of the in-coming tenant, and which might just as well be settled by the out-goer and in-comer themselves. It also relieves him of the risk of having to take a tenant-right at a valuation, the amount of which may not afterwards be obtainable from an in-comer. This risk is a very real one, as market garden crops and produce fluctuate in value tremendously in a very short period, and, in this respect, cannot be compared with farm crops and produce. Further, the valuation of market garden trees and crops is very intricate, and requires thorough knowledge not only of values, but also of the districts and aspects, as some sorts of trees and crops, which are very remunerative in a good position, are worthless in another. Many cases where a landlord has had to bear a considerable loss between the amount of a valuation and the amount paid by the in-comer have come under my notice.

A paper upon the Evesham custom would be incomplete unless the subject was discussed in connection with the Market Gardeners' Compensation Acts, especially as amending Acts have lately been before Parliament. Although in the immediate neighbourhood of Evesham, where the transfer system prevailed, there were formerly not many real causes for grievance, some hard cases were reported, and there was a feeling of insecurity because tenants had no legal claim to the improvements they had effected. There was, consequently, agitation to secure the legal right to improvements, and the late Colonel Long, when member for South Worcestershire, succeeded in getting the Market Gardeners' Compensation Act, 1895, passed. It was the intention of Colonel Long and of Parliament that the Act should be retrospective—*i.e.*, that the landlord should be liable to pay compensation for tenant's improvements effected in market gardens before the passing of the Act. In the first contested case this interpretation of the Act was upheld, but upon appeal the House of Lords held that the Act did not have retrospective effect, and efforts to make the original intention of the Act law failed until 1906, when a clause was inserted in the Land Tenure Bill providing for the retrospective action of the Market Gardeners Act. The Bills introduced last year were in consequence of the decision in the Court of Appeal in 1911 in the case of *Kedwell* v. *Flint and Co.* From the passing of the Market Gardeners' Compensation Act, 1895, down to 1911 it had been generally assumed that the Act applied to all improvements executed after the Act by yearly tenants who were in possession on January 1, 1896. The Court of Appeal decided that in the case of a yearly tenancy, terminable at Michaelmas, the only compensation they were entitled to claim was for improvements executed before Michaelmas, 1897. This decision seriously affected many of the market gardeners in the district. In December, 1911, Mr. Eyres-Monsell, M.P., introduced a simple Bill, the object of which was to restore to market gardeners the right to compensation and the security which they had enjoyed under the Act of 1895, until the decision in the case of *Kedwell* v. *Flint and Co.* The position was complicated by the introduction of another Bill, raising larger issues, but finally both Bills were withdrawn upon the President of the Board of Agriculture undertaking to introduce a Bill on the lines of Mr. Monsell's Bill as an "agreed measure." *At the moment of writing this Bill had been rapidly passed through all the stages in the House of Commons, and was expected to be placed in the Statute Book immediately.*

It must be pointed out, in connection with the Market Gardeners Act, that while landlords did not object to the operation of the Evesham custom, the provision under the Act of an arbitrary valuation in the place of the free sale of improvements of the old custom aroused opposition. Landowners and land agents were afraid of the liability to find the amount of a possibly heavy valuation, which might not afterwards be obtainable from an in-coming tenant. Consequently, since the passing of the Market Gardeners' Compensation Act, 1895, very little land has been let in the Evesham district as "market garden land," though in support of the Act it may be said that it has done a great deal to strengthen the Evesham custom, and has provided a convenient method for the compensation to be assessed, in cases where the landlord gave notice to quit, or refused all in-comers. Land-

lords generally have adopted "particular agreements" in letting out fresh land since the passing of the Act of 1895. These "particular agreements" contain clauses which are modifications of the Evesham custom. Under the agreements the landlord guarantees the tenant such compensation as could be obtained under the Act if the landlord turns him out; he allows the tenant to transfer his interest in the holding to an approved in-comer in the event of his wishing to give up of his own accord, but bars him from claiming direct from the landlord if he himself gives notice to quit. Nearly all the new holdings are let, not as "market garden land," but as "arable land" or "allotment land," with clauses inserted in the agreement drawn on the lines just mentioned. These "particular agreements" appear to be quite satisfactory to both landlord and tenant, and are adopted upon the majority of the estates around Evesham.

There are cases in the district where considerable farms have been let under the provisions of the Evesham custom, and the custom has generally worked so well and satisfactorily with regard to small holdings that it is sometimes suggested that it should have larger application.

SOCIETIES.

ROYAL HORTICULTURAL.

March 4 and 5.—A special show of spring bulbs was held in conjunction with the fortnightly meeting of the above society in the Vincent Square Hall, on Tuesday last, and remained open for two days. There was a very large attendance on the first day, and at times the hall was crowded with visitors. The show was an excellent one in every respect.

The exhibits of Orchids were staged in the annexe; the Orchid Committee granted one First-class Certificate and six Awards of Merit to novelties.

The Floral Committee granted three Awards of Merit.

The Narcissus Committee sat for the first time this season and made Awards of medals to 5 collections. There were fewer exhibits than usual in the Fruit and Vegetable section.

At the 3 o'clock meeting in the lecture-room, Mr. W. H. Divers gave an address on "The Spring Flower Garden."

Floral Committee.

Present: Henry B. May, Esq. (in the chair), and Messrs. C. T. Druery, Charles E. Shea, Wm. J. James, Chas. E. Pearson, W. J. Bean, John Green, J. W. Moorman, Thomas Stevenson, Charles Blick, J. F. McLeod, C. R. Fielder, Wm. Howe, John Dickson, Charles Dixon, Arthur Turner, Edward Mawley, F. Page-Roberts, A. Watkins, J. Jennings, G. Reuthe, W. A. Bilney, Bernard Crisp, J. W. Barr, R. W. Wallace, W. P. Thomson, E. H Jenkins, W B. Cranfield, and Capt. Dorrien Smith.

A spring garden, designed by Messrs. James Carter & Co., Raynes Park, was a most delightful conception. The motif was a narrow terrace, supported by dry stone walls where Alpines and other trailing plants grew, and spacious rich-green lawns. In the centre of the garden was a charming pair of tall, hammered gates; a dense band of yellow Crocuses glowing, widely expanded; in the warm sunlight, just behind the gates, was the feature of the exhibit. The "sunlight," it must be explained, owed its presence to lamps cunningly hidden behind the gate pillars, but the illusion was complete. The terraces were filled to overflowing with Narcissi—chiefly rich yellow trumpet Daffodils, whilst the old leaden vases at the ends and by the gates contained vivid scarlet Tulips and rich blue Hyacinths. The lawns were of rich green colour, and every blade was of equal height. A paved walk bordered by bands of Tulips and Crocuses completed the display. (Silver-gilt Flora Medal.)

Another admirable exhibit of a totally different character was a large group of hardy plants shown by Sir Everard Hambro, K.C.V.O., Hayes Place, Hayes, Kent (gr. Mr. J. Grandfield). This very comprehensive collection of flowering shrubs and alpines excelled those of the large trade growers for variety and excellence of culture. Amongst the shrubs were floriferous examples of Rhododendron "Pink Pearl," Azalea indica—the type plant with white flowers and many of the red-flowered varieties, as well as sturdy bushes of Azalea amœna, smothered with bright blossoms. The dainty Kalmia latifolia, Erica Veitchii, E. mediterranea, and many others were shown. Amongst the alpines were groups of Primula denticulata, and Grape Hyacinths (Muscari botryoides). One Tulipa Fosteriana with glowing scarlet flowers stood out prominently from a multitude of rare and beautiful Saxifrages. Jankæa Heldreichii, Anemones of many kinds and Androsaces, all splendidly grown. There was no studied striving for effect, the plants were simply arranged, but very charming withal. (Silver-gilt Flora Medal.)

Messrs. Pipers, Bishop's Road, Bayswater, designed a delightful rockery. Two rocky mounds, capped with Brooms and double Japanese Cherries, weighted down with flowers, provided a congenial home for many Alpines such as Saxifraga Burseriana and Androsaces. In valleys were Primula denticulata, P. frondosa, P. megaseæfolia, P. rosea, and Anemone pulsatilla, forming broad sweeps of rich colour. (Silver-gilt Banksian Medal.)

Messrs. R. Wallace & Co., Colchester, built a low rockery, on which were displayed many Saxifrages, Fritillarias of the pretty dwarf varieties, and Tulipa ingens. (Silver Flora Medal.)

Mr. Clarence Elliott, Six Hills Nursery, Stevenage, arranged a low rockery on which were planted broad sweeps of Saxifraga Burseriana gloria, S. Faldonside, and other Saxifrages. The bold arrangement was a pleasant contrast to many of the rock-garden exhibits, which were overcrowded with plants. (Silver Flora Medal.)

Mr. James Box, Lindfield Nurseries, Haywards Heath, filled a corner of the hall with a pleasantly arranged collection of Alpines, backed with flowering and everygreen Shrubs. (Silver Banksian Medal.)

Messrs. Geo. Jackman & Son, Woking, also exhibited a rockery on which we noticed Lithospermum prostratum, Cyclamen ibericum, Thalictrum anemonoides, Epimedium sulphureum, Anemone pulsatilla alba, and Morisia Hypogeæ. (Silver Banksian Medal.)

Messrs. J. Cheal & Sons, Ltd., Crawley, exhibited a small rockery planted with Alpines and backed with Rhodendrons in flower. (Bronze Flora Medal.)

Mr. Maurice Prichard, Christchurch, Hampshire, showed an interesting collection of Primulas, including P. cashmeriana grandiflora, P. Sieboldii, and P. denticulata varieties, also spring-flowering shrubs. (Bronze Flora Medal.)

The Wargrave Plant Farm, Ltd., Twyford, constructed a pretty rockery which was embellished with suitable plants, amongst which Chionodoxa hypnoides was especially attractive.

Messrs. Barr & Sons furnished a small rockery, with groups of Chionodoxa Luciliæ and other bulbs, including Muscari botryoides alba and hybrids of the dainty Narcissus cyclamineus and N. triandrus.

Messrs. Whitelegg and Page, Chislehurst, Kent, showed Aubrietias, Primulas, Fritillarias, and Narcissi.

Messrs. John Peed & Son, West Norwood; The Misses Hopkins, The Mere Gardens, Shepperton-on-Thames; The Burton Hardy Plant Co., Christchurch, Hampshire; and Mr. H. Hemsley, Crawley, Sussex, also showed rockeries and Alpines.

Messrs. Wm. Fells & Son, Hitchin, Hertfordshire, had a novel exhibit, consisting of a selection of dwarfed Conifers arranged on a small rockery.

Messrs. J. Veitch & Sons, Chelsea, displayed a great variety of forced flowering and foliage shrubs, such as Forsythia suspensa, Diervilla rosea "Eva Rathke," Pyrus Malus Scheideckeri, very floriferous Wistaria sinensis; Lilacs and Rhododendrons. This firm also showed strains of Cineraria. dwarf, floriferous plants possessing a wide range of colour. The blue flowers of the "Cactus" strain, which may be described as dwarf and graceful. C. stellata varieties are especially charming. (Silver-gilt Banksian Medal.)

Messrs. Wm. Cutbush & Son, Highgate, again contributed an excellent collection of forced shrubs. Pots of various Tulips, arranged along the front, gave brightness to the group. (Silver Flora Medal.)

Mr. G. Reuthe, Fox Hill Nursery, Keston, Kent, exhibited cut flowers of Camellias, Rhododendrons, and Magnolia Campbellii, as well as various rare Alpines in pots. (Bronze Flora Medal.)

Messrs. W. T. Ware, Ltd., Feltham, exhibited Alpines, amongst which the dwarf compact Wallflower-like Erysimum helveticum and various Primulas were conspicuous.

Messrs. Bakers, Wolverhampton, showed many Primulas, dwarf Irises, &c.

Messrs. G. and A. Clark, Ltd., Dover, exhibited a good strain of bedding Polyanthus and Primroses.

Mr. L. R. Russell, Richmond, displayed flowering Shrubs and Primulas.

Mr. R. d'E. Day, The Nursery, Sutton Scotney, Hampshire, showed in large vases a most charming collection of Spanish Irises in many shades of colour. Belle Chinoise (rich yellow) and Raphael (pale heliotrope and yellow) are especially desirable varieties. (Bronze Banksian Medal.)

Mr. G. Engelmann, Saffron Walden, exhibited over the name Freesia Ragioneri a delightful strain of Freesias in very many shades of colour, but the flowers are not so fragrant as in F. refracta. (Bronze Flora.)

Messrs. H. B. May & Sons, Upper Edmonton, showed a collection of stove and greenhouse Ferns and Clematises in relatively small pots. (Silver Banksian Medal.)

Messrs. Koster & Sons, Boskoop, Holland, showed Lilacs, including the variety Hugo Koster, which received an Award of Merit.

Mr. W. A. Manda, South Orange, New Jersey, arranged a large group of Begonia semperflorens variety Christmas Red.

Messrs. Allwood Brothers, Wivelsfield Nurseries, Haywards Heath, were awarded a Silver Banksian Medal for an exhibit of Carnations.

Messrs. Stuart Low & Co., Bush Hill Park, Enfield, displayed many large pans of excellent Cyclamen, Acacia cordata, A. armata, and others; the fragrant Boronia megastigma, various Heaths, and an exceptionally good collection of Carnations. (Silver Banksian Medal.)

Mr. H. Burnett, St. Margaret's, Guernsey, again showed excellent cut blooms of Carnations. (Silver Banksian Medal.)

Carnations were also exhibited by Messrs. Young & Co., Hatherley; Mr. C. Engelmann, Saffron Walden (Bronze Flora Medal), and Messrs. Wm. Cutbush & Son.

Messrs. H. Cannell & Sons, Swanley, Kent, arranged many excellent plants of the florist's and the stellata Cineraria in the annexe.

Messrs. Blackmore & Langdon, Tiverton Hill Nursery, Bath, showed a large number of double and single Violets. (Bronze Flora Medal.)

Messrs. Pipers, Bishop's Road, Bayswater, London, contributed a large number of round baskets filled with the best varieties of Hyacinths. Morino (waxy blush), Lord Derby (pale blue), Lady Derby (flushed pink), Grand Maître (pale blue), and Yellow Hammer are only a few of the excellent blooms.

Messrs. Sutton & Sons, Reading, arranged groups of bedding Hyacinths in tasteful colour-schemes. The mixture of pink and white was very charming, and the combinations of cream and rich red, pale yellow and dark blue, were very effective. At one end of the bulbs a group of Sutton's Superb Salmon Fringed Cyclamen illustrated the great improvement in this type—the flowers have true Cyclamen shape, are of good colour, and are well fringed. (Silver Flora Medal.)

Mrs. Balfour, Langley Lodge, Headington Hill, Oxford (gr. Mr. A. Hewlett), arranged a collection of Hyacinths in pots. The best varieties were Blancheur, à Merveille Schotel, Etna and Correggio (Silver Banksian Medal.)

Messrs. Carter Page & Co., London Wall, London, showed Narcissus, Hyacinths, Tulips, and other spring bulbs growing in bowls of fibre. (Bronze Flora Medal.)

Messrs. R. SYDENHAM, LTD., showed a small collection of Daffodils, Lily of the Valley, and a few Tulips. The Daffodils included Marjorie (white perianth and clear yellow cup), and Millie Price (a large-eyed Poeticus variety).

The WARGRAVE PLANT FARM, LTD., displayed a good selection of Tulips in the annexe.

AWARDS OF MERIT.

Lilac Hugo Koster.—A handsome variety with strikingly bold dense-flowered trusses and large individual "pips" of which many were ¾ inch in diameter. The colour showed considerable variation. Expanded flowers on the old plants were a distinct soft blue, the buds in the same trusses being shaded with purple, but in the younger plants the colour was a more evenly distributed rosy-lilac. (Shown by Messrs. KOSTER, Boskoop.)

Mazus rugosus.—A small perennial creeper with runners, and leaves in sessile, rosulate tufts, about ½ inch long, spathulate in shape and with serrated margins. The short racemes of large flowers scarcely exceeded an inch in height and arched over the foliage. The corolla is one inch long, of a pleasing mauve-blue colour with a short, notched upper lip and a large curved equally three-lobed lower lip. On either side the central lobe wore white crests spotted with yellow which ran back to the short tube. Mazus rugosus as figured in *Sweet's Flower Garden* I. 36 is an annual without runners, extending through the Himalayan region to China. (Shown by THE WARGRAVE HARDY PLANT FARM, LTD.)

Saxifraga × *Faldonside.*—The origin of this hybrid is obscure, but it was raised some years ago by Mr. Boyd, and in some cases seems to have been accidentally distributed with, and as, S. Boydii, but it is a much superior plant, and for vigorous habit, easy culture, and large flowers ranks as the best yellow Kabschia hybrid. The flowers are pale lemon-yellow, ¾ inch in diameter, of very beautiful form with full, overlapping petals which are crimped at the edges. The small orange-coloured glandular disk in the centre of the flower gives a pleasing touch of deeper colour. The flowers are borne in twos and threes on short stems, and the foliage is rather larger and the habit bolder than those of S. Boydii. The pink suffused stem, silvery foliage, crenulated petals and fine form suggest S. Bursersiana as one of the parents. The plant is extremely free-flowering, some ten trusses being borne on the plant, which was growing in a small 60 sized pot. (Shown by SIR EVERARD HAMBRO.)

OTHER NOVELTIES.

Pimelia microcephala, raised from seed, was shown by Capt. A. A. DORRIEN-SMITH.

A species of Crataegus (probably C. crenulata) raised from seed obtained from China was shown by CHAS. COLTMAN ROGERS, Esq. The plant has neat, glossy foliage, but the plants were too small to exhibit the general habit and were not berried.

A very striking Hyacinth (named Starlight) was shown by F. R. DIXON-NUTTALL, Esq., Eccleston Park, Prescot. The deep-blue flowers are set off by a large white eye. Most visitors were impressed by the extraordinary resemblance to a Delphinium spike when seen from the distance.

GENTIAN CUP COMPETITION.

The Gentian Cup, presented to the society by Messrs. R. WALLACE & Co. and offered for the best exhibit by an amateur of Alpine Plants, in a space not exceeding 5 x 3 feet, was won by Sir EVERARD HAMBRO (gr. Mr. J. Grandfield). The group was composed of almost perfect specimens of a great variety of Alpines, but as small boulders were used the prominence of the pots and pans in which the plants were growing detracted from its appearance. Of the plants in flower the delightful blue Omphalodes cappadocea, Primula Winteri, Saxifraga Burseriana Gloria, S. Boydii, and S. scardica obtusa were especially fine, and amongst the species not in flower were large, vigorous rosettes of Saxifraga longifolia.

Orchid Committee.

Present: J. Gurney Fowler, Esq., in the Chair, and Messrs. Jas. O'Brien (hon. sec.), Sir Harry J. Veitch, Sir Jeremiah Colman, Bart., J. S. Moss, S. Low, Gurney Wilson, F. Sander, R. G. Thwaites, F. J. Hanbury, F. M. Ogilvie, T. Armstrong, A. McBean, W. Cobb, J. Charlesworth, J. Cypher, W. H. Hatcher, W. P. Bound, J. E. Shill, H. G. Alexander, W. Bolton, De B. Crawshay, W. H. White, A. Dye, S. W. Flory, and C. Cookson.

Messrs. SANDER AND SONS, St. Albans, were awarded a Silver Flora Medal for a good group, in which were several hybrid Odontoglossums, the best of which has O. princeps (crispum Luciani × Lawrenceanum), a very fine and well-marked flower. Good forms of Cattleya Trianæ, Renanthera Imshooiana, Lycaste gigantea, Cattleya Parthenia Prince of Wales, and other hybrids, and a selection of Dendrobiums were also included.

Messrs. CHARLESWORTH AND CO., Haywards Heath, were awarded a Silver Banksian Medal for a small group of specially good Orchids, including a grand specimen of the now rare Phaius tuberculosus, with three spikes, several Angræcum citratum with from five to eight sprays of white flowers; Sarcochilus Hartmannii with eight spikes of wax-like, white flowers; S. Fitzgeraldii, with five sprays of blooms; Odontoglossum Jasper, O. Elaine, and other Odontoglossums; Cattleya Trianæ Backhousiana, and other Cattleyas, and the very interesting Odontonia Cybele (Odontoglossum cirrhosum × Miltonia candida grandiflora), a remarkable cross, the flowers of which have the lanceolate sepals blotched with chestnut red, the broader petals similarly coloured, and the broadly ovate-acuminate fringed lip white with red marking at the base, and chestnut red blotches in front of the crest, no trace of the tubular form of the base of the labellum of M. candida being discernible.

Messrs. STUART. LOW AND CO., Bush Hill Park, Enfield, were awarded a Silver Banksian Medal for an effective group in which were some specially good varieties of Cattleya Trianæ, C. T. Painted Lady being a very handsome form, with broad, rose-purple bands up the sepals and petals, and a rich purple front to the lip, C. Susanne Hye de Crom, Dendrobium Wardianum, the singular little D. linguæforme, Cœlogyne, pandurata, Ansellia africana, and some hybrid Cypripediums were also included.

Messrs. J. CYPHER AND SONS, Cheltenham, were awarded a Silver Banksian Medal for a well-arranged group in which were noted Angræcum sesquipedale, good Dendrobium Findlayanum, D. Apollo album, D. nobile virginale, and other Dendrobiums; bright scarlet Sophronitis grandiflora, and Cochliodas; the yellow Masdevallia Hincksiana, M. Shuttleworthii, Lycaste Skinneri, and the best white form of L. S. alba, good forms of Cattleya Trianæ, etc.

Sir JEREMIAH COLMAN, Bart., Gatton Park (gardener Mr. Collier), showed an interesting selection of rare species and varieties, among which were Dendrobium fusiforme, with six sprays of white flowers; the new blush-white D. bigibbum Lady Colman (see Awards), Zygopetalum rostratum, Cirrhopetalum picturatum, the singular Eulophia Saundersii, Acanthophippium bicolor, Bulbophyllum barbigerum, and Pleurothallis Grobyi.

Messrs. HASSALL AND CO., Southgate, staged a small group, the central figure in which was the charming Brasso-Cattleya Menda, from the same cross as that which gained a First Class Certificate at the last meeting; B. C. Digbyano-Mossiæ Queen Alexandra, some hybrid Odontoglossums, and a very fine white form of O. crispum.

E. H. DAVIDSON, Esq., Orchid Dene, Twyford, showed Brasso-Cattleya Dora (C. Trianæ albens × B. C. Digbyano Mossiæ Queen Alexandra), a grand flower, which promises to be one of the best white Brasso-Cattleya, its flowers being very large and finely formed. The flowers, although not fully developed, were white, with a greenish tinge on the sepals and lip; Odontoglossum Twyford Gem (Rossii rubescens × formosum), a very pretty flower, with bright rose-purple lip and deep red spotting on the sepals and petals; Odontioda Zephyr, with a distinct rose margin; O. Charlesworthii, with deep red flowers; and the handsome O. Bradshawiæ, Orchid Dene varety, were included.

Sir TREVOR LAWRENCE, Bart., K.C.V.O. (gr. Mr. W. H. White), showed a fine spike of Eulophiella Peetersiana which had been in flower at Burford for a month, and now had seventeen flowers and buds, the expanded blooms being of a deep rose-pink and white; also a fine specimen of Sophro-Lælia Psyche (see Awards).

H. S. GOODSON, Esq., Fairlawn, Putney (gardener Mr. G. E. Day), sent Odontoglossum percultum var. Mrs. Goodson, a very pretty flower, O. ardentissimum, and O. Captain Humphrey, a pretty flower, probably an O. Uro Skinneri cross.

Prantia Ralli, Esq., Ashtead Park (Orchid grower Mr. Farnes), sent Sophro-Lælio-Cattleya Marathon, Ashtead Park variety, a finely-coloured flower, with a deep claret coloured front to the lip, and Oncidioda Cooksoniæ, Ralli's variety (see Awards).

F. MENTEITH OGILVIE, Esq., The Shrubbery, Oxford (gardener Mr. Balmforth), sent Odontioda Charlesworthii, The Shrubbery variety, with large, deep, blood-red flowers, and Odontoglossum Hardwoodii.. The Shrubbery variety.

WALTER COBB, Esq., Normanhurst, Rusper, sent Odontoglossum Lawrenceanum, Cobb's variety, which had previously secured an Award of Merit; Odontioda Cooksoniæ, the Gem and Cobb's variety; a fine O. Bradshawiæ; and Sophronitis grandiflora Cobb's variety.

Messrs. J and A. MCBEAN, Cooksbridge, showed the noble Odontoglossum eximium Alpha, which secured a First Class Certificate (see Awards); Odontioda St. Fuscien, and the finely-shaped Cattleya Tityus var. Excelsior (Enid × Octave Doin).

Monsieur H. GRAIRE, Amiens, showed Odontoglossum, Saturne (nebulosum × Harryano-crispum), partaking much of O. nebulosum, blush-white, spotted with brown.

Messrs. J. VEITCH AND SONS, Chelsea, showed a fine plant of Eulophiella Elisabethæ, with two spikes of fine, wax-like white flowers.

Mrs. NORMAN COOKSON, Oakwood, Wylam (gardener Mr. H. J. Chapman), sent a grand form of Odontioda Bradshawiæ, with a spike of thirteen flowers.

Mr. W. A. MANDA, St. Albans, showed a selection of Cattleya Trianæ and a good form of C. Schroderæ.

Messrs. ARMSTRONG AND BROWN, Tunbridge Wells, showed plants of a cross between Dendrobium crassinode and D. moniliforme, which are identical with the rose-petalled D. Sybil, said to have been between D. bigibbum and D. moniliforme, a parentage which was doubted by some, and now proved to be incorrect so far as D. bigibbum is concerned.

FIRST CLASS CERTIFICATE.

Odontoglossum eximium Alpha, from Messrs. J. and A. MCBEAN, Cooksbridge. One of the finest of hybrid Odontoglossums, large and of fine shape, the flowers closely blotched with claret-red, narrow white lines and margin appearing between the colour.

AWARDS OF MERIT.

Cattleya Trianæ Colossal, from Lieut.-Col. Sir GEO. L. HOLFORD, K.C.V.O., Westonbirt (gardener Mr. H. G. Alexander). A noble flower, of fine size and substance. The sepals and nearly orbicular crimped petals light-rose pink, the broadly-expanded crimped lip having a claret-purple front and orange disk.

Odontioda Mossiæ (Cochlioda Noezliana × *Odontoglossum maculatum),* from J. S. Moss, Esq., Bishops Waltham (gardener Mr. Kench). A distinct cross, with red flowers, the lip being distinctly lobed, and lighter than the petals.

Miltonioda Harwoodii, Moss's variety (Miltonia vexillaria × *Cochlioda Noezliana),* from J. S. Moss, Esq. A great improvement on the original form, flowers showing much of the shape of Miltonia vexillaria, but smaller; deep magenta-rose.

Dendrobium bigibbum Lady Colman, from Sir JEREMIAH COLMAN, Bart. (gr. Mr. Collier). A charming new form, with pretty blush-white flowers, and practically an albino.

Oncidioda Cooksoniæ. Ralli's variety (Oncidium macranthum Cochlioda Noezliana), from Pantia Ralli, Esq., Ashtead Park. A finer form of the cross which obtained a similar award on February 4. Flowers deep red, with yellow tip to the libellum.

Lælio-Cattleya Smilax Prince of Orange (L. C. Charlesworthii × *C. Enid*), from Messrs. J. and A. McBean, Cooksbridge. In habit similar to the favourite L. C. Charlesworthii, but larger in all the segments of the flowers, which are deep orange-coloured, with a dark claret tinted front to the lip.

Cultural Commendation.

To Mr. W. H. White, orchid grower to Sir Trevor Lawrence, Bart, K.C.V.O., for a fine specimen of Sophro-Lælia Psyche, with sixty scarlet flowers. To Mr. J. E. Shill, gardener to Baron Bruno Schröder, for a well-grown specimen of Cœlogyne pandurata, with two spikes of its large, pale-green and black flowers.

Narcissus Committee.

Present: E. A. Bowles, Esq. (in the chair), Miss Willmott, Messrs. W. R. Cranfield, Walter T. Ware, Jan de Graff, Joseph Jacob, Herbert Smith, Arthur R. Goodwin, W. W. Fowler, Charles Digby, H. V. Warrender, W. Goldring, W. Leak, G. Reuthe, R. W. Wallace, Christopher Bourne, F. Herbert Chapman, G. H. Engleheart, J. D. Pearson, P. Rudolph Barr, Charles Dawson, and W. Poupart.

Messrs. Barr & Sons, Covent Garden, London, displayed many good seedling Daffodils, chiefly of the Trumpet section. Of the named varieties Sunrise, Fireflame, Sunbeam, Firelight, Lord Kitchener, Astate, and King Alfred were especially charming. A smaller collection of Tulips included richly-coloured flowers of Rêve d'Or, Pride of Haarlem, and Bartigon. (Silver Flora Medal.)

Messrs. Cartwright & Goodwin, Kidderminster, showed a tasteful collection of Daffodils. The light-capped varieties, Chough, Southern Star, Lucifer, and Armorel demanded admiration. Fairy, King Alfred, Neptune, and Mervyn of the Trumpet section, were equally meritorious. (Silver Flora Medal.)

Mr. C. Bourne, Simpson, Bletchley, showed a very tastefully arranged collection, the varieties Olympia, Duke of Bedford, Lemon Belle (Trumpet section), Dewdrop, Alpine Snow, Queen of Hearts, Sinbad, Phœbus, and Apollo (Leedsii) are a selection from the many fine varieties shown. At the end of the group there were many Tulips, Muscari botryoides, and other spring bulbs. (Silver-gilt Banksian Medal.)

Messrs. Walter T. Ware, Ltd., contributed from their Ingelscombe Nurseries, Bath, many new Daffodils of the Trumpet variety. Thora (white perianth and yellow trumpet), Macebearer (sulphur-yellow perianth and widely expanded orange-tipped chalice), Simma and Harold Finn (good poetaz varieties), were the outstanding kinds. (Silver Banksian Medal.)

Messrs. J. R. Pearson & Sons, Chilwell Nurseries, Lowdham, Nottinghamshire, arranged an exceedingly attractive collection of Daffodils in which varieties of the Barri section were very prominent. Unicorn (a large vellow Trumpet variety), Lowdham Beauty and Vega were especially noteworthy. (Silver Banksian Medal.)

Messrs. R. H. Bath, Ltd., Wisbech, exhibited Daffodils, Tulips and Crocuses growing in bowls of fibre.

Fruit and Vegetables Committee.

Present: George Bunyard, Esq. (in the chair), Messrs. Jos. Cheal, W. Bates, Edwin Beckett, J. Davis, A. R. Allan, J. G. Weston, W. E. Humphreys, A. Bullock, P. W. Tuckett, H. H. Williams, C. G. A. Nix and G. Reynolds.

The only exhibit before the committee was an excellent collection of salading plants, from Messrs. Sutton and Sons, Reading. Besides Cucumbers (Sutton's Market) of perfect appearance, there were splendid baskets of Early Paris Lettuce, Radishes, Mustard and Cress, Chicory and Dandelion. (Silver-gilt Knightian Medal.)

Competitive Bulb Classes.

In the majority of the classes the entries were fully as numerous as in former years and the general appearance of the exhibits was very pleasing, but the quality of the Hyacinths was not equal to that of the two previous years. The foliage was a trifle weak and the flower-spikes in many instances lacked symmetry, but the flowers were fresh and, with a few exceptions, of good colour. Tulips were fewer in number than usual, but those exhibited were very meritorious. A gold medal offered by the Haarlem General Bulb Growers' Society was awarded to the Hon. Vicary Gibbs, Aldenham House, Aldenham (gr. Mr. E. Beckett), for his collection of Hyacinths. The blue-flowered varieties were exceptionally good and included King of the Blues, Schotel, Perle Brilliant and Ivanhoe.

The first prize for 18 Hyacinths, distinct, was awarded to F. R. Dixon Nuttall, Esq., J.P., Inglesholme, Ecclestone Park, Prescot (gr. Mr. J. H. Barker), who showed splendid spikes of Gounod (pale blue), Jacques (flushed pink), and La Grandesse (white). 2nd, the Duke of Portland, Welbeck Abbey, Worksop (gr. Mr. J. Gibson), in whose collection Perle Brilliant, Moreno and Electra were of high merit. 3rd, Mrs. Henry Balfour, Langley Lodge, Headington Hill, Oxford (gr. Mr. A. Howlett).

The best 12 Hyacinths were exhibited by the Marquis of Salisbury, Hatfield House, Hatfield (gr., Mr. H. Prime). The outstanding varieties were Moreno, King Menelik (intensely dark blue), Perle Brilliant, and Lady Derby. 2nd, R. G. Morrison, Esq., The Hollies, Victoria Park, Wavertree (gr. Mr. H. Raper).

In the class for 6 Hyacinths the premier prize was won by A. Hanson, Esq., Ivanhoe, Victoria Park, Wavertree, who showed excellent plants of Perle Brilliant, La Victorie and Correggio. 2nd, Lord Hillingdon, Wildernesse, Sevenoaks



THE LATE WILLIAM COCKER.

(gr. Mr. J. Shelton). 3rd, Mr. Arthur Levita, Norton Priory, Chichester (gr. Mr. H. Edwards).

The class for 4 pans of Hyacinths, 10 roots of one variety in each pan, was responsible for many charming exhibits. The colours pleasantly blended, and when viewed from one end the many pans of fresh flowers presented a gay and attractive appearance. The first prize was awarded to H. G. Tyson, Esq., Hollybush Lodge, Old Southgate (gr. Mr. G. T. Weddle), whose exhibit was excellent; 2nd, the Duke of Portland; 3rd, the Marquis of Salisbury.

Bulbs in Moss Fibre.

The prizes in the following three classes were offered by Mr. Robert Sydenham for plants grown in vases of moss fibre or a similar material (not earth) and without drainage. The class for 6 Single Hyacinths, selected from a published list of 16 varieties, was keenly contested. The first prize was won by Lady Tate, Park Hill, Streatham Common (gr. Mr. W. Howe); 2nd, Miss Gordon Thompson, The Elms, Potters Bar; 3rd, the Hon. Mrs. Guy Baring, St. Cross Mill, Winchester.

In the classes, under similar conditions, for 6 vases of Tulips and for 6 vases of Narcissi Lady Tate and the Hon. Mrs. Guy Baring won the first and second prizes respectively. The Tulips—Vermilion Brilliant, and Montressor—shown by Lady Tate were very gorgeous.

Messrs. R. & G. Cuthbert, Southgate Nurseries, Southgate, were awarded the Haarlem Bulb Growers' Gold Medal for a magnificent collection of Hyacinths in pans, which occupied the entire end of the hall. This monster exhibit included all the best varieties, and the spikes of bloom were fresh and good.

NORTH OF ENGLAND HORTICULTURAL.

ANNUAL MEETING.

February 19.—The annual meeting of this society was held at the Queen's (Midland) Hotel, Leeds, on this date. Fellows were present from all parts of the North of England. It was announced that the number of Fellows subscribing one guinea was identically the same as last year, but there was an increase of 86 per cent. in half-guinea Fellows, an increase of five Associate Members, and one additional Life Fellow. The total number of Fellows and Members was 506, compared with 414 for 1911.

The chairman emphasised the fact that it must continue to be a North of England society, and not local in its ideas or work. It was not to be expected, he said, that the Society could at once make ends meet by working on these lines, but sufficient support had been forthcoming to prove that such a society for the North was wanted. Earl Grey was re-elected president, the Hon. Rupert Becket was appointed treasurer, J. C. Jackson, A.C.A., auditor, and the Rev. J. Bernard Hall, secretary.

The Society's spring show will be held at Bradford on March 12 and 13, when the Rev. J. Jacob will lecture on "The Tulip."

MANCHESTER AND NORTH OF ENGLAND ORCHID.

February 20: *Committee present*: Rev. J. Crombleholme (in the chair), Messrs R. Ashworth, J. Cypher, J. Evans, A. Hanmer, D. McLeod, W. J. Morgan, C. Parker, F. K. Sander, H. Thorp, Z. A. Ward, Wm. Thompson, and H Arthur (secretary).

A larger silver gilt medal was awarded to Z. A. Ward, Esq., Northenden (gardener, Mr. Weatherby), for a group of well-grown Ondontoglossums in variety.

Silver medals to S. Gratrix, Esq., Whalley Range (gardener, Mr. Brown), A. Warburton, Esq., Haslingden (gardener, Mr. Dalgleish), for miscellaneous groups; Colonel J. Rutherford, M.P., Blackburn (gardener, Mr. Lupton), for a group of Odontoglossums; and Messrs. J. Cypher and Sons, Cheltenham, for a mixed group.

A bronze medal was awarded to Rev. J. Crombleholme, Clayton-le-Moors (gardener, Mr. Marshall), for a group of Cypripediums.

Other exhibitors included O. Wrigley, Esq., Bury (gardener, Mr. Rogers); Messrs. Charlesworth and Co., Haywards Heath; Mr. W. Shackleton, Great Horton; Messrs. A. J. Keeling and Sons, Bradford; and Mr. J. Birchenall, Alderley Edge.

Awards of Merit.

Crypripedium West Point Monarch (C. Mrs. Cary Batten × alcibiades) and *C. Lady Dillon "West Point" variety* (C. nitens "Ball's" variety × Mrs. Mostyn), both the property of S. Gratrix, Esq.

Obituary.

William Cocker.—We record with regret the death of Mr. William Cocker, senior partner of the firm of Messrs. James Cocker and Sons, Springhill Nursery, Aberdeen, which took place at his residence, Springhill, on Thursday, the 27th ult., at the comparatively early age of 55. Mr. Cocker was the son of a nurseryman, and the grandson of a nurseryman. Rose-growing had a peculiar fascination for him—as it had for his father, who was a well-known rosarian of his day. As a lad he worked in the nurseries of Messrs. John Laing and Sons, Forest Hill, London. From thence he proceeded to Mr. Charles

Turner's nursery at Slough, returning later to assist his father. Mr. Cocker considered one of his finest productions that exquisitely beautiful rose which he named after his mother, Mrs. James Cocker. Besides Roses, Mr. Cocker took interest in the culture and hybridisation of Primulas, Polyanthuses, and hardy herbaceous plants. Mr. Cocker lived to see his firm occupy a prominent position. He had been in failing health for a long time, and for over a twelve-month his surviving brother, Mr. Alexander A. Cocker, has had the supervision of the firm's business.

MARTIN GRADY.—The death of Mr. Martin Grady at the age of 71 years, on January 29 at his home in Flushing, is recorded in *The American Florist*. The deceased had travelled a great deal in the interests of the Parsons Nurseries until its suspension from business about ten years ago. He was born in Ireland, and emigrated to America when 21 years of age. Mr. Grady is survived by a wife and three daughters

THE WEATHER.

THE FOLLOWING SUMMARY RECORD of the weather throughout the British Islands, for the week ending March 5, is furnished from the Meteorological Office :—

Weather.—The general condition was rather variable, but although the sky was seldom clear, rain was neither frequent nor heavy; over a considerable portion of England and the east of Scotland the greater part of the week was dry.

THE WEATHER IN WEST HERTS.

Week ending March 5.

A return to warmer weather.—The past week proved on the whole decidedly warm for the time of year, notwithstanding two cold days. There were no cold nights, and on the warmest day the highest reading on the thermometer screen was 56°, which is 9° warmer than is usual at the beginning of March. The ground is at the present time 1° warmer at 2 feet deep, and 3° warmer at 1 foot deep, than is seasonable. Rain fell on five days, but the total quantity for the week was only about ¼ inch. The present dry period has now lasted over three weeks. For more than a fortnight there has been no measurable percolation through either of the soil gauges. The sun shone on an average for 1½ hours a day, which is less than half the mean duration for the same period of the year. On four days no sunshine at all was recorded. The first three days proved calm, but since then the wind has been rather high, the direction being very variable. The mean amount of moisture in the air at 3 p.m. fell short of a seasonable quantity for that hour by 2 per cent.

FEBRUARY.

Warm, very dry, and rather sunless.—Notwithstanding a cold period lasting twelve days, this proved a warm February. On the warmest day the temperature in the thermometer screen rose to 56°, the highest reading in February for ten years. On the coldest night the exposed thermometer registered 20° of frost, which is only slightly below the average extreme minimum reading for this the last winter month. Rain fell on only twelve days, and to the total depth of less than an inch, which is less than half the average quantity for the month. In fact, this was with one exception the driest February for seventeen years. Snow fell on two days, but on each occasion the flakes melted on reaching the ground. The sun shone on an average for two hours, five minutes a day, which is a quarter of an hour a day short of the average daily duration for the month. The winds were as a rule light. Indeed, on no day did the mean velocity for any hour exceed twenty miles—direction south. For 172 hours, or seven days, the direction was some point between north and east. The mean amount of moisture in the air at three o'clock in the afternoon fell short of a seasonable quantity for that hour by 2 per cent.

THE WINTER OF 1912-13.

Remarkably warm and sunless, and rather wet.—In the last twenty-seven years there has been only one other winter as warm. All three months were unseasonably warm, and more particularly December, which may be said to have remained warm throughout. On the warmest day the temperature in the thermometer screen rose to 56°, and on the coldest night the exposed thermometer registered 20° of frost. Neither of these extremes is any way remarkable. The total rainfall amounted to 8¼ inches, which is more than an inch in excess of the average for the season. December proved wet, January very wet, and February as exceptionally dry. Snow fell on only five days, and on one of those days the ground was covered for a short time to the mean depth of 3 inches. The sun shone on an average for one hour, twenty-two minutes a day, which is twenty minutes a day short of the average duration for the season. In the last twenty-seven years there have been only five other winters as sunless.

OUR UNDERGROUND WATER SUPPLY.

Since the winter half of the present drainage year began in October, the total rainfall has been 13¼ inches or ¼ inch in excess of the average for the same five months in the previous fifty-seven years, which is equivalent to an excess of rainfall on each acre in this district of 7,010 gallons. At the same time last year there was an excess of 117,630 gallons per acre.—*E. M. Berkhamsted, March 5, 1913.*

ANSWERS TO CORRESPONDENTS.

BEES: *W. F. G.* It is early to purchase yet, as the Isle of Wight disease is carrying off many stocks. You had better wait until the end of April, and by that time it may be possible to judge the condition of stocks better as regards health.

"BEETATOES": *J. S.* You should not attach too much importance to articles appearing in the lay Press regarding new plants raised between totally different genera. It is probable that the supposed hybrid between a Potato and a Beet is a tuber of some well-known exotic plant possessing the colour of a Beet and the shape of a Potato. We notice that the novelty is of American origin. In that country they have the Citrange (a cross between the Citrus and the Orange) and the Plumcot (a cross between the Plum and the Apricot). These crosses are, however, between closely allied genera of the same Natural Orders, and, therefore, are not remarkable.

LEAVES OF STOVE PLANT TURNING BROWN: *G. H. M.* No disease is present. The trouble is most probably due to improper watering, the plants having received either an excess or insufficiency of moisture at the roots.

MANURE FOR CHRYSANTHEMUMS.—*H. B. J.*—You will be well advised not to use your manure formula for the general stock of plants. The secret of successful manuring is experiment and a knowledge of the soil. Small batches of plants should be set aside so that they may be fed with experimental mixtures, and records of quantities and behaviour kept for future guidance. The following is a safe general stimulant for Chrysanthemums:—Two parts sulphate of ammonia, one part sulphate of potash, and six parts superphosphate, dissolved in water at the rate of ½ oz. per gallon of water. This manure may be supplemented with diluted liquid manure made from sheep or fowl dung, and one or more of the standard proprietary chemical manures. *The Chemistry of the Garden*, by H. H. Cousins, contains valuable and reliable information on manures. The work may be obtained from our publishing department, price 1s. 1½d. post free.

NAMES OF PLANTS: *O. R.* 1, Satyrium carneum; 2, Habenaria arenaria; 3, Bletia verecunda; 4, Brassia verrucosa; 5, Oncidium concolor; 6, Sophronitis cernua. *T. T. H.* 1, Pteris aquilina; 2, Asplenium viride; 3, Asplenium Trichomanes. *J. D.* Cordyline australis. *Anglia.* Rhododendron præcox.

NAMES OF FRUITS.—*G. H. T.* 1, Lady Henniker; 2, Prince Bismarck. *T. H.* 1, Winter Whorle; 2, Kastle Major, Brownlees's Russet, Cockle's Pippin, King's Acre Pippin, Allen's Everlasting, Adams's Pearmain, Reinette de Caux, syn. Dutch Mignonne, Wyken Pippin, Sturmer Pippin, Court Pendû-plat.

PAINT PEELING OFF IN A HOTHOUSE.—*E. B.*—The general cause of the paint in interiors of planthouses peeling off is improper preparation. Before painting afresh, remove the old coatings, and open the ventilators and doors until the woodwork has become dry. This will necessitate the removal of the plants. When the woodwork is thoroughly dry, a good priming coat should be thoroughly applied, and allowed to set before the other paint is applied.

PROPAGATING PHLOX DECUSSATA.—*John R. D. Sinclair.*—At this season of the year the most satisfactory method of increasing border Phloxes is by means of cuttings made from young shoots. By comparison, "the heel cutting from the crown of the root-stock" is useless, and, indeed, difficult to secure. Lift a clump, or as many plants as are deemed desirable, from the border, and plant them in a cold frame near to the glass, or place them in a cool greenhouse. In a week or so new growth will develop and furnish suitable cuttings. The best type of spring cutting is made from the extreme tips of the new shoots. These should be 3 inches or so in length, cutting them immediately below a joint and removing the lower pair of leaves. The cuttings may be planted in boxes about 8 inches in depth, with holes in the bottom. The boxes should be not more than half-filled with very sandy soil, so as to permit of a sheet of glass being placed on the top to prevent evaporation of moisture. If a frame on a hotbed is available, such covering will not be required, but it is necessary in a greenhouse. Insert the cuttings firmly and up to the first pair of leaves; water the soil thoroughly, and allow some days to elapse before applying further moisture. In a moist atmosphere and a temperature of 50° the cuttings will form roots in three weeks. Meanwhile other shoots suitable for making cuttings will have appeared on the stock plants, and, if desired, these may be rooted in the same manner.

PROPAGATION OF PYRETHRUMS: *Correspondent.* P. roseum (sy. Chrysanthemum coccineum) forms a ground-tuft of leafy, fern-like growths and a great mass of root-fibres. Generally it is more easily propagated than the Delphinium. The soil should be washed from the roots and the fibres shortened to about 6 inches in length, using a sharp knife. Two-year old plants divided soon after flowering give the best results, although the same clumps divided early in April give plants of greater vigour. Like the Delphinium, the stems of the Pyrethrum are hollow, and equally valueless for purposes of propagation. In dividing the old tufts it is possible, by giving a sharp downward pull, to have the cutting with a heel of old wood attached, and if these are inserted in the same manner as recommended for Delphiniums they will soon form roots. In detaching the cuttings it is necessary to take hold of them quite near to their bases, stripping them from the rootstock rather than pulling them. The cuttings will furnish fine plants in a couple of seasons, and the flowers will be greatly superior to those produced by specimens propagated by division. Old plants of Pyrethrum may be composed of six or eight dozen shoots, and these need to be carefully and systematically thinned. The plant grows best in light, loamy soils. Plenty of manure is necessary and an abundance of moisture in summer.

RATS AND BROAD BEAN SEEDS: *O. E. C.* As you cannot trap the rodents or lay poison your best method of prevention would be to coat the seeds, previously to sowing, with moistened red lead. If the seeds are already sown, spraying the surface of the ground with petroleum emulsion twice a week until the seedlings appear above ground will often act as a deterrent to these pests.

ROSE ENEMIES: *R. J. T.* If the ground below the Roses is not occupied by other plants it would be well to dress it with freshly-slaked lime as soon as possible. From now until the end of the autumn syringe the Rose bushes once a week with a decoction of quassia chips. Although this procedure will not ensure the Roses against injury it will greatly minimise the danger. It is generally convenient to prepare concentrated quassia decoction and dilute as required. One pound of quassia and one and a half pounds of soft soap boiled in a little water for two hours will be sufficient for 10 gallons of water.

STAKING DELPHINIUMS: *F. E. C.* To secure the flower spikes of Delphiniums which are grown in a very exposed border, and, when staked in the usual manner, are frequently snapped off by gales, we would suggest that you use Pea sticks. During the early stages of the plant's growth tie each shoot to a short stake, and when the plants are about 18 inches high place two or three clean-grown Hazel sprays to each Delphinium clump, so that the top of the Hazels incline towards the centre. As the growths develop secure them to the Hazel tops by passing soft, tarred cord around the whole. The Hazel sprays should be trimmed so that when inserted in the ground their tops will be at the height the Delphiniums generally grow in your borders, and if the projecting twigs are removed the effect will not be unsightly.

Communications Received.—F. A. D.—Old Subscriber—A. J. G.—E. W.—J. D.—C. & H.—O. A. C.—Advise—W. J.—F. W. B.—J. W. O.—G. A. P.—L. G.—J. H. H.—J H. D.—F. D., Balaruc-les-Bains—H. S. D.—P. A.—L. N.— H. E. W.—M. C. B.—G. G.—H. S. C.—A. F. J.—A. P.—P., Cork—G. M. T.—E. N.—A. H.—A. G.—Nil Desperandum—Perplexed—W. B.—F. W. O.—A. T. H.—Foreman, Mont.—Cornishman—A. R. J.—C. P. R., Kew—J. D.—A. O.



IRIS TROJANA

(From "The Genus Iris," by W. R. Dykes.)

THE
Gardeners' Chronicle

No. 1,368.—SATURDAY, March 15, 1913.

CONTENTS.

Austria, gardening in 169
Birds, nestling, the food for 169
Blakeney Point, field laboratory for ... 168
Books, notices of—
The Genus Iris ... 170
Coke, the sale of ... 171
Cultivating ground by explosives 169
Cyclamen, culture of .. 172
Diploma in horticulture, proposed National 168
Ford, Wm., the late ... 172
Forestry, notes on ... 171
Henry, Mr. A. 163
Heredity and mutation 164
Hooker, Sir Joseph, memorial to 171
Kew Gardens employés wages ... 169
Lathyrus luteus, crossing, with the Sweet Pea 173
Land, undeveloped ... 172
Law note... 173
Lawn tennis ground, the 163
Nicotine, commercial value of 169
Obituary—
Tickner, Walter ... 173
Orchid notes and gleanings—
Dendrobium Ainsworthii splendidissimum 162
Masdevallia triangularis 162
Pests, scheduled ... 161
Phylloxera vastatrix, the Vine Louse ... 161
Pittosporum with pink flowers 172
Poultry industry in North Wales 169
Rainfall of 1912, the ... 173
Rosary, the—
Cultural notes for March 162
Roses, artificial, at the exhibitions 173
Runciman, Mr., in Holland 169
Scotland, notes from... 173
Seeds, sterilisation of... 172
Societies—
British Gardeners' ... 174
Debating 175
Horticultural Club ... 173
Leeds Gardeners' Benefit 174
Linnean 174
Royal 174
Royal Horticultural 168
(Scientific Committee) 173
Scottish Horticultural 174
Stinging nettles, the destruction of... ... 169
South Africa, notes from 165
South African Combretaceæ, the 164
Sundries, R.H.S. trial of 169
Timber and forest products, research work in 168
Trees and shrubs—
Azara microphylla ... 165
Veronica Traversii ... 172
Voles eating Holly leaves 172
Weather in Scotland, the effects of the ... 171
Week's work, the—
Apiary, the 167
French Garden, the... 167
Flower garden, the ... 166
Fruits under glass ... 166
Hardy fruit garden, the 166
Kitchen garden, the 167
Orchid houses, the ... 167
Plants under glass ... 166
Worshipful Company of Gardeners, the ... 168
Yew-woods and Beech-woods on the Chalk 172

ILLUSTRATIONS.

Henry, Mr. A., Portrait of 163
Iris trojana (Coloured Supplement) ... ...
Hooker, Sir Joseph, Memorial tablet 171
Œnothera rubricalyx 165
Phylloxera vastatrix, the Vine Louse 161
Veronica Traversii in Kilkarran gardens... 172

DESTRUCTIVE INSECTS AND PESTS.

VII.*—THE VINE LOUSE.

THE Vine Louse, Vine Aphis, or Grapevine Phylloxera (Phylloxera vastatrix, Planchon), appears to be indigenous to North America, and to have been imported into Europe almost exactly fifty years ago. Ten years before that time it was probably unknown to science, and Buckton states that the earliest notice he had found of the grape aphis occurs in 1856 (at p. 158 of the *First and Second Report on the Noxious Insects of the State of New York*, by Dr. Asa Fitch). It was first recorded in Great Britain by Berkeley (*Gardeners' Chronicle*, 1863, p. 584), as occurring on a vine growing in a greenhouse at Hammersmith; and was described in an illustrated article by Westwood in the pages of the *Gardeners' Chronicle* in 1869 (p. 687). Westwood, who seems only to have known the root form, named the insect Peritymbia vitisana. Soon after 1863 the Vine Louse invaded France,† and later other European countries, and the devastation wrought by the pest almost threatened to extinguish the vineyards in some countries. This fact quickly led to the appointment by various Governments of commissions of investigation. At the present day a number of countries have joined forces and collaborated in promulgating a Phylloxera Convention to combat the Vine Louse, but Great Britain is not a party to this Convention. The pest is widespread in Europe and North America, and occurs in South Africa, Australia, and some of the Western countries of Asia. It has occurred sporadically in England, and at least once in the past in Scotland. It has been reported to me from two sources as having been found during the past autumn on a vine in a large private garden in the West of England.

It is possible that our climate is not very suitable for the complex life-history of the Vine Phylloxera, and in any case we grow comparatively few vines in the open. In our vineries and hothouses, however, the equable conditions are probably quite suitable to it, and no pains should be spared to prevent it obtaining a footing. The Vine Louse is perhaps, on the Continent and in North America, the most harmful of all the aphidian pests, and it is certain that no other insect has been written about so much.

In general the damage done consists in the withdrawal of the juices elaborated by the vine for its own nourishment and for the production of fruit. The disease is characterised by the formation of galls on the leaves (Fig. 73, *d*) and roots (Fig. 73, *h*) at the points of irritation. In the presence of the pest the vines do badly, gradually losing vitality, and eventually dying.

The life-history and description of the Vine Louse is extremely complex, for there are several generations which differ very considerably from one another in appearance, and some feed on the leaves and some on the root fibrils

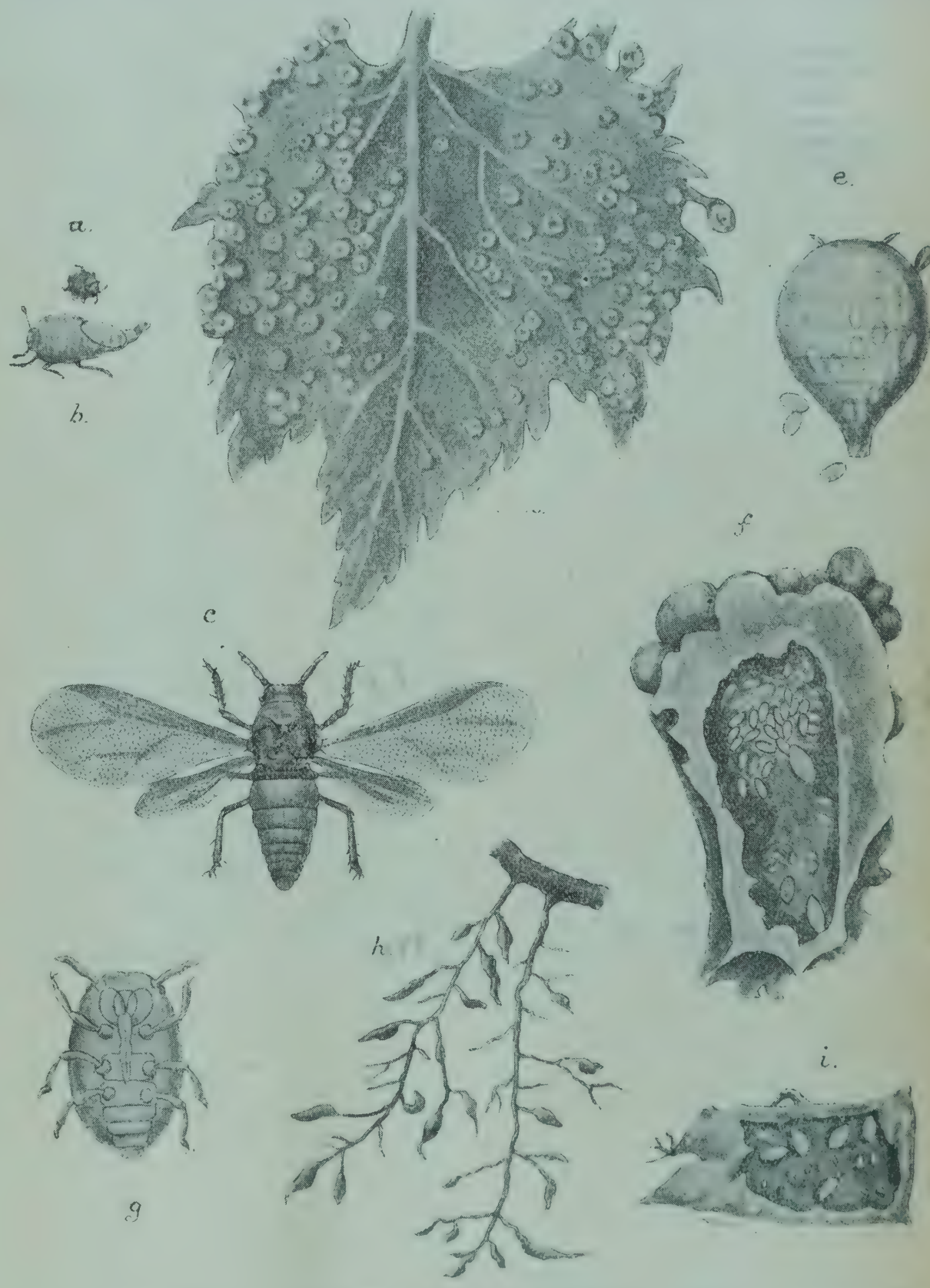


Fig. 73.—VINE LOUSE (PHYLLOXERA VASTATRIX, PLANCHON).

a, Male, and *b*, Wingless Female with single fecundated egg, enlarged, but to same scale; *c*, Winged Female, highly magnified; *d*, Vine Leaf, covered with galls, natural size; *e*, Foundress from leaf gall, laying large numbers of eggs, highly magnified; *f*, Section of leaf-gall, showing larvæ and ova of several generations, highly magnified; *g*, Under side of root-feeding larva, magnified; *h*, Portion of root showing galls and swellings, natural size; *i*, Section of root-gall, showing larvæ and eggs, magnified. (The Figures are after Buckton.)

* The previous articles appeared on September 28, October 12, November 2, December 7, 1912, February 1 and March 1, 1913.

† According to Buckton Marlatt (U.S.A.: *Farmer Bulletin*, No. 70) says that the Phylloxera was carried France about 1859 on rooted American vines.

The insect may pass the winter in the egg stage—in which case larvæ hatch in the spring—or the larvæ may hibernate. In spring the larvæ moult, become adult foundresses (Fig. 73, *e*), and deposit many eggs, which give rise to wingless gall-making females. These wingless females—produced, it may be, in galls on the leaf—give rise in their turn to galls (Fig. 73, *d* and *f*). Owing to the irritation they cause by sucking away the juices the leaves become discoloured. From the gall-producing generations some females pass below-ground and give rise to galls on the roots (Fig. 73, *h* and *i*), where they lay eggs. The eggs hatch into larvæ (Fig. *g*), which quickly mature and lay eggs. Numerous generations of wingless root-feeding, egg-laying females are produced in this way. So rapid, indeed, is the increase that a single insect in March may give rise to 25 millions in October. With the advent of autumn some larvæ from eggs on the roots may come above-ground and develop into winged females (Fig. 73, *c*), which may fly to new vineyards and unaffected vines, and there lay large eggs and small eggs, the large giving rise to females and the small eggs to males (Fig. 73, *b* and *a*). Up to this point the generations have been produced parthenogenetically, that is, without the co-operation of male insects. The males and females of the new generation now pair, and each female lays one egg (the "winter egg"), which carries the insect over the winter and gives rise to a foundress similar to that with which we began the life-history.

The means utilised to combat the Vine Louse are many and ingenious, and have received the devoted attention of capable workers in many countries. One of the latest accounts of experiments directed to test various means of combating the pest is given by Moritz in the *Arbeiten aus der Kais. Biol. Anstalt für Land- und Forstwirtschaft*, 1908 (Vol. VI., Pt. 5, pp. 498-571).

Among the many means devised to combat this pest, only a few are at all satisfactory, and perhaps the best are:—

(1) The use of resistant stocks of the vine, of American origin—perhaps the most important of all measures.

(2) Flooding or inundation of the vineyards soon after the fruit is gathered, and growth has ceased, in order to destroy the root forms before the hibernating period is reached. Submersion, if carried out as early as possible (September), may only be necessary for ten days to a fortnight, or a month, if done in October, but the later it is done the longer it must last to be effective. It must be noted that submersion cannot be carried out on all soils—e.g., sandy and open soils.

(3) Thorough irrigation for two days at a time in summer is of much help.

(4) The use of bisulphide of carbon, injected into the soil, say 1 oz. per square yard, in quarter-ounce injections at four places, kills root larvæ and females.

(5) Vines appear to be less affected in very sandy soils, and hence where the Phylloxera is feared soil under glass should receive a plentiful admixture of sand. Marlatt (*U.S.A. Farmers' Bulletin*, No. 70), even goes so far as to say that "the resistance is proportionate to the percentage of sand in the soil."

(6) Insecticides of various kinds are employed to destroy the "winter" eggs which are deposited in crevices on the stocks and bark.

Sulpho-carbonate of potassium is fairly efficacious as an insecticide, as also are other chemical agents, but carbon bisulphide is perhaps the best and most convenient. Moritz's experiments, referred to above, included the use of petroleum, Lysol, Cresol soap solution (German pharmacopœia), formalin (40 per cent. solution of formaldehyde), potassium permanganate, etc. *H. C. Long.*

ORCHID NOTES AND GLEANINGS.

DENDROBIUM AINSWORTHII SPLENDIDISSIMUM.

A SPECIMEN of this pretty and fragrant hybrid, raised from D. aureum and D. nobile, with nine new pseudo-bulbs well furnished with large white and rose flowers with claret-red centres, is a fine object in the Orchid house of F. E. Sidney, Esq., F.S.A., Moreton, Holly Place, Hampstead, where it is arranged with other well-flowered Dendrobiums, including varieties of D. nobile, the trilabelliate D. n. Cooksonii being represented by three well-flowered examples, D. Jamesianum, D. Wardianum, D. primulinum, and others. These are growing in the middle compartment of a span-roofed house with three divisions, in each of which the Orchids are thriving well, Angræcum sesquipedale Cypripedium Boxallii, C. villosum, C. Victoria Marie, C. Leeanum Masreelianum, C. Spicerianum, Odontoglossum Hallii leucoglossum, O. ardentissimum, Coelogyne cristata, and others being in bloom.

MASDEVALLIA TRIANGULARIS.

THIS pretty and floriferous species was shown with other Masdevallias in the group staged by Messrs. J. Cypher and Sons, Cheltenham, at the meeting of the Royal Horticultural Society on March 4. It is specially noteworthy on account of the peculiar construction of the labellum The plant is one of the earliest discovered Masdevallias, dating from 1842, although it did not appear in cultivation until 1882, when it was imported by Messrs. Sander and Sons. It belongs to the section "Caudatæ," and bears numerous yellow flowers spotted with purple, the equal perianth segments being campanulate, 1 inch across, and bearing filiform tails 2 to 3 inches long. As with many other Orchids, the most extraordinary feature is the least prominently displayed. In this case the rather small blade of the lip, which is whitish with some rose markings, bears at the apex a small elongated tuft of blackish hairs, suggestive of an insect struggling to get a foothold. It is an extraordinary arrangement and well worth further investigation.

THE ROSARY.

CULTURAL NOTES FOR MARCH.

AMERICAN SYSTEM OF ROOTING CUTTINGS.

THOSE who are anxious to increase their stock of any Rose will find the American plan of rooting cuttings in coarse sand an excellent one. The cuttings should be taken from healthy plants that have just flowered. Select well-ripened wood containing two eyes. With a sharp knife make a clean short cut just beneath an eye. Remove the bottom leaf stalk, but retain the topmost one. The cuttings should be kept moist until they are inserted in the sand. The cuttings root best in a shallow bench fixed over hot-water pipes, but I have struck them in boxes of sand resting upon the water pipes. Use clean, sharp sand on the benches to a depth of five inches, and make the layer firm by wetting it and pounding it well with a brick. Draw a straight line with a thick knife to a depth of 1½ inch. Insert the cuttings at from 1 to 2 inches apart, according to their size. Good, sound, hard wood will also form callus in moist sand. Water the sand well when a few rows are inserted, and see that it never afterwards becomes dry. Frames are not necessary, but the cuttings should be shaded from strong sunshine by a thin cheese-cloth arranged on a light, wooden frame that should be removed when the sun is not shining.

The temperature of the sand should be as near to 60° as possible, and the temperature of the house about 52°. After about thirty days the cuttings have roots about ¾-inch long. They should then be potted into 27-inch pots filled with loam, leaf-mould and sand well mixed together, and passed through a ¾-inch sieve. Pot firmly, and do not allow the cuttings to remain for too long a period in the sand after they have formed roots. Rooted cuttings, or "own-root" plants as they are termed in the trade, furnish splendid plants for growing in pots. Cuttings offer an easy method of obtaining a supply of the best sorts.

PRUNING.

The very early season has made the work of pruning a most difficult one. All Roses planted last autumn and in the present spring should be cut hard back,—the correct method of dealing with newly planted Roses. The freely blooming varieties should be cut back to within 3 or 4 inches from the ground level. The shoots of varieties of the Hugh Dickson type may be retained some 12 inches long, and grown like Pillar Roses, in which form they are especially successful. I recommend placing tripods for these Roses, setting three plants in a clump. Newly-planted Wichuraiana varieties should be very sparsely pruned, but the Multifloras and Climbing Teas are best cut back to within two or three feet of the ground. In the case of established Roses, much of the old wood should be cut clean away, but this is best done in September. The well-ripened growths made before July last will furnish the best blooms. These may be retained a good length if the sort is a vigorous one, but hard pruning gives the best results as regards the bedding varieties.

Wichuraiana and Multiflora Climbers should have the lateral growths shortened to within 3 to 6 inches—the weaker to one inch. Brown old growths amongst the Multifloras are best removed entirely. Roses of the Briar family need very little pruning, and I never prune at all the Austrian Copper and Penzance Briars, whilst the species of Rosa are best left to grow at will, save when they get out of bounds.

Rugosa Roses yield finer fruit if pruned hard, but the hybrids, such as Conrad F. Meyer, that are grown for their blossom may be pruned moderately. This variety makes a fine bold bush, and the annual growths may be left from 4 to 5 feet or more in length. Lateral growths of all such Roses are best pruned back to two or three eyes. Weeping Roses should not be pruned until early autumn, when some of the growths should be cut back hard. Established Roses of a weeping habit are best pruned after they have flowered, removing the old wood to encourage the new growths. The laterals or shoots of old Weepers are best shortened to two or three eyes.

Standard Roses of the free-headed type, such as W. A. Richardson, need not be pruned very much; it is better to tie the long growths in the shape of an umbrella, and shorten the laterals. Ordinary Standards of free blooming kinds are best pruned rather hard, and the centres of the heads should be thinned freely. After all the pruning is finished the beds and borders should receive a good dressing of manure, unless this was applied last November, which is preferable. By planting Roses in rows one yard apart an excellent opportunity is afforded for making deep trenches up the centre of the rows in which to place rich farmyard manure as a reserve of food for future needs.

ROSES UNDER GLASS.

Roses planted out under glass will be benefited by a top-dressing of two parts pulverised sheep manure, three-fourths of a part wood ashes, one-fourth of a part bone flour, and four parts good soil. After first forking the surface of the soil lightly, place a liberal amount of this mixture as a top-dressing, and fine roots will soon grow in it. This same mixture would be beneficial to pot Roses, and also to out-of-door Roses in May. Advantage should be taken of all low walls having a west or south aspect both indoors and out to plant on them the beautiful Tea varieties that are not climbers. I refer to such varieties as Maman Cochet and its white variety, W. R. Smith, Lady Roberts, and Recuerdo de A. Peluffo. If lightly pruned, such varieties quickly spread and give a per-

petual supply of useful blossoms; indeed, I consider them more serviceable for moderate greenhouses than the too rampant climbers that rarely bloom but once. I have seen walls of seven and eight feet high covered with Marie Van Houtte, Anna Olivier, etc., and I intend planting in this manner the beautiful Sunburst, which has been aptly termed the "Yellow Chatenay." Rambler Roses in pots will need much attention. They need plenty of moisture; as they are grown in comparatively small pots, care must be taken to see that they do not suffer from dryness at the roots. The charming climbing sport of Mrs. Cutbush is a great acquisition on account of its perpetual flowering, and it cannot fail to become a useful variety for pot culture. *Experience.*

THE LAWN TENNIS GROUND.

After the work described in my previous article (*Gard. Chron.*, Dec. 14, 1912, p. 444) has been carried out, much remains to be accomplished before the lawn tennis ground is brought into perfect condition for the season. Levels must be taken, weeds eradicated, turf repaired, worms destroyed, and the surroundings of the ground must receive attention.

The roller and the lawn mower must now be in constant use, and these machines will reveal sinkage in many places on the ground. Although on well-laid grounds this is hardly noticeable, on those formed on natural soil sinkage is sure to occur. To remedy it the turf may be raised gently with a fork and rammed, or removed, and replaced on a layer of well-sifted soil; constant ramming and rolling will complete the process.

Weeds, too, so much in evidence in the spring of the year, will need constant attention; but only a section of the ground should be worked at a time, and this should be measured out with care between two strings set across or up and down the ground and about a yard apart—the careful groundsman works from side to side of the court. The eye of the plant may be pierced with a pointed instrument dipped in vitriol, or some other acid; but while many approve of this method, men of the older school prefer to take each plant out by the root, using a common fork.

When turf is worn out, it should be thrown aside, the soil brought to a fine tilth at a depth of from 8 to 10 inches, freely manured, and resown with seed, at the rate of an ounce per square yard. Young grass appears as a rule after about twenty-one days, and when an inch in height, should receive a dressing of malt culms, rape dust, or some other prepared compost, which will not only stimulate the growth, but will protect the young grass from any unusual extremity of the weather. A light garden roller should be used a little later on, and when 2 inches or more in height, the sward may be rolled and cut regularly. Bare patches should be forked over lightly and re-sown.

Worm casts are another nuisance, and without a doubt a great deal of the sinkage of the ground is due to the continual movements of worms in the soil. Levels become untrue, the collapse of the worm-burrows causes depressions, and the casts themselves, when rolled down, smother the finer grass, leaving bare, unsightly patches.

In employing methods of eradication it should be remembered that worms breed in the autumn and also in the spring until the end of May.

During mild weather and when the ground is moist, a portion of the tennis court should be left unrolled for a day or so. The worms will then open up their runs, and acetic acid may be freely used; or Carter's worm-killer, which is to be recommended very strongly, may be employed. It should be used at the rate of half a pound per square yard. The powder should be sprinkled evenly upon the ground, and if well watered it is most effective. Should water not be available the worm-killer may be used with equal advantage in mild, rainy weather.

That the grass on every lawn tennis ground would benefit by an annual dressing goes without saying. It means additional expenditure, but the careful man may save in other ways.

Rank growths of grass next to the boundary fence, or netting, should be done away with, and much labour and expense might be saved by leaving a narrow path between the actual grass and the fence. Cutting, shearing, or trimming would be dispensed with, while the tennis balls would be more readily found. *Harry Danes.*

THE NEW PROFESSORSHIP OF FORESTRY AT DUBLIN.

Mr. Augustine Henry, who has been appointed to the new professorship of Forestry in the Royal College of Science, Dublin, from April 1 next, is a native of Co. Derry, and was born in 1857. He was educated at the Cookstown Academy. At Queen's College, Galway, he obtained numerous scholarships, and at Queen's College, Belfast, he received in 1879 the Dunville Studentship. He graduated in the Queen's University as B.A. in 1877, and M.A. in 1878, on each occasion obtaining first-class honours. Mr. Henry studied Medicine,



Photograph by A. W. Crisp & Co.

MR. AUGUSTINE HENRY, M.A., V.M.H.,

First Professor of Forestry in the Royal College of Science, Dublin.

and took the highest place in 1879 at the University examination preceding that for the M.D.

Mr. Henry practically abandoned Medicine by entering the service of the Chinese Government under Sir Robert Hart in 1881, and for some years his official work took him through many parts of China hitherto unexplored by Europeans. His researches into the flora of these regions were extraordinarily fruitful. He sent vast collections of dried plants to Kew and the other great botanical establishments of the world. The material which reached Kew alone numbers some 158,000 specimens. These contained over 6,000 distinct species, of which nearly 1,000 species were new to science, and what is more astounding, they included over 30 new genera. The addition to gardens from China during the last twenty years are due in great measure to the labours of Mr. Henry, which induced one or two great horticultural firms in England, together with the Arnold Arboretum and the Department of Agriculture in the United States, to send out collectors to China for rare and useful plants. Mr. Henry himself introduced a considerable number of novelties, amongst which may be mentioned Lilium Henryi. Apart from the horticultural value of these discoveries, the gain to knowledge in the problems of plant distribution was remarkable. Mr. Henry was also stationed for two years in Formosa, and published the first account of the flora of the island which is now the choicest possession of the Japanese Empire.

In the extreme south-west of China, Mr. Henry made a study of the primitive Lobo tribes, and compiled a dictionary of their language.

For his services to Botany, Mr. Henry was elected F.L.S. in 1888, Corresponding Member of the Edinburgh Botanical Society in 1891, and Corresponding Member of the Pharmaceutical Society of Great Britain in 1892; and was awarded the Veitch Memorial Medal in 1902. For his services to Horticulture, he received the Victorian Medal of Honour from the Royal Horticultural Society in 1906.

It was during his botanical explorations of China that Mr. Henry's attention was directed to forestry, and since his return to Europe in 1900, his sole pursuit has been that subject. He studied at the National School of Forestry at Nancy in 1903-4, and travelled extensively in many countries investigating the conditions of both wild and cultivated forests.

As a result of his visit in 1906 to the United States, he introduced from Montana the seed of the Western Larch, a fine species which had practically not been tried before in Europe; and also succeeded in obtaining seed of the Fraser River Birch, which may prove useful as a wood for furniture in this country. He afterwards travelled in Algeria and in nearly all the countries of Europe, except Russia, Turkey and Greece. Earlier he visited Japan, Ceylon, and Southern India.

From 1903 onwards Mr. Henry has been engaged in collaboration with Mr. Henry J. Elwes on the "Trees of Great Britain and Ireland," the last volume of which, carrying the work to 2,000 pages, is in the press. It is an exhaustive study of the trees which are capable of cultivation in these islands.

Instruction in Forestry was instituted at the University of Cambridge in 1907, when Mr. Henry was appointed Reader in Forestry. The School of Forestry at Cambridge has already under his guidance made considerable progress. Funds to the amount of £7,000 have been obtained, of which £4,500 was raised by private subscription, for the erection of a building, which will be taken in hand immediately. A collection of nearly 2,000 specimens, illustrative of timbers, diseases of trees, and forest botany (exclusive of Herbarium specimens) has been gathered by Mr. Henry from many sources. The specimens of timber are unrivalled for their variety, and illustrate many problems of silviculture. Research in timber has been started on scientific lines, with the assistance of a grant from the Development Fund. The Indian Forest Probationers are now trained at Cambridge as well as at Oxford. An advisory officer has been appointed for a district embracing twelve counties, of which Cambridge is the centre. Mr. Henry's experimental work on Mendelian lines in the breeding of trees is expected to be of practical value in obtaining fast-growing varieties which will render certain forms of forestry profitable. His paper on this subject, read before the Linnæan Society in 1910, marks an epoch in forestry, and has been translated into French and German.

Mr. Henry has given lectures several times before the Royal Dublin Society, and was elected Member of the Royal Irish Academy in 1907. The degree of M.A. *honoris causa* was conferred on him by the University of Cambridge in 1908.

Mr. Henry has written numerous articles in *Kew Bulletin*, *Gardeners' Chronicle*, *Quarterly Journal of Forestry*, *Nature*, and other scientific periodicals. He is a Member of the Council of the Royal English Arboricultural Society, and of the Scientific Committee of the Royal Horticultural Society. He is also a member of the Den

drological Societies of France, Germany, and Austria, and of the Forestry Societies of Belgium and of Franche Comté, France. He is also Fellow of the Cambridge Philosophical Society.

THE SOUTH AFRICAN COMBRETACEÆ.

(*Continued from p.* 147.)

9.—COMBRETUM APICULATUM, *Sonder* in *Linnæa*, xxiii (1850), 45.

A small, much-branched tree, 6 m. high, or shrub; second year branches stout, terete, brownish or dark grey, stringy-barked, glabrous; twigs opposite or alternate, short, compressed and subangulate, occasionally puberulous within the furrows, but usually glabrous, lepidote and somewhat glutinous. Leaves opposite, subopposite or alternate, ascending, much longer than the internodes; petiole 3-5 mm. long, glabrous, grooved above, convex and sulphur-lepidote below; leaf-blade elliptic or oblong, tipped by a sharp recurved apiculus (rarely rounded), narrowing from below the middle into the petiole, 4 to 10 cm. long, 2 to 5 cm. broad, in youth membranous and viscid, at maturity thinly coriaceous, pale shining green, glabrous on both surfaces except for the minute dorsal rufous axil-tufts, thinly sulphur lepidote on the midrib and its 5 to 7 pairs of arcuate-ascending veins, the scales sparingly scattered on the remaining leaf surface; margin conspicuously undulate. Spikes axillary, solitary, borne on long peduncles, shorter than or exceeding the leaves, cylindric, 2 to 3 cm. long, averaging 1.7 cm. broad, the entire inflorescence sparingly lepidote and hispid; peduncle slender, 1 to 2 cm. long. Flowers sweetly scented, greenish; bracts linear, minute, 2 mm. long, glabrous. Receptacle 5 to 6 mm. long, its lower half narrowly fusiform, its upper shortly campanulate, 3.5 mm. in diameter, sparingly pilose within; disk cupular, margin lobed and hispid; calyx-segments shortly and broadly triangular, ciliolate. Petals clawed, minute, 1 mm. long and broad, the limb suborbicular, occasionally emarginate, with longish yellowish hairs. Stamens glabrous, greenish, 5 to 6 mm. long. Style stout, obtuse, glabrous, not exceeding the stamens. Fruit four-winged, almost quadrate or orbicular, truncate or subemarginate, 2 to 3 cm. long, 2.5 to 2.7 cm. broad, shiny bronze or brownish, lepidote, the wings sublunate, 5 to 6 mm. broad, inconspicuously transversely striate; pedicel lepidote, 3 to 6 mm. long.

Sonder in Harv. and Sond., *Fl. Cap.*, ii. 510 (1862). Lawson in Oliver's *Fl. Trop. Afr.*, ii, 429 (1871). Engler and Diels, l.c. 42, t. xii, f.C Burtt-Davy in *Transvaal Agric. Jour.*, v (1906-07), 424. Sim, *Forest Fl. Portuguese East Africa*, 63 (1909), f. 63, C. apiculatum v. sulphureum and var. viscosum, Van Heurck and Muell-Arg., *Obs. Bot.*, 229, 231 (1871). C. glutinosum, Wood in *Trans.* Phil. Soc. S. Africa, xviii, ii (1908), 156 (not Guill. and Perr.).

Kalahari Region.—Transvaal, Magaliesberg, Oct., Burke 520 (flow. and fruit spec.) Zeyher, 553 (flow. spec.). Makapansberge, Streydpoort, Rehmann, 5475 (fruit spec.). Hillsides, Queen's River Valley, Barberton, 600-750 m., Jan., 1890, Galpin, 740 (fruit spec.). Potgieter's Rust, Dist. Pietersburg, 1080 m., Feb., 1904, Bolus, 11027 (fruit spec.).

Eastern Region.—Natal and Zululand, Gerrard, 1131 (fruit spec.).

Extends northwards into tropical territory viâ the east coast as far as British East Africa, and westwards through Matabeleland into German South-West Africa, forming in the latter region a constituent of the Bush-Savannah, and ascending up to 1,500 metres elevation. The same species, according to Mrs. E. F. Lugard, is said to be in full leaf and flower by December in Ngamiland. Baines's specimen from the South African gold-fields has a peculiar gall growth, which simulates the fructification of Avens, Geum rivale. Wood includes C. glutinosum Guill. and Perr. in his revised list of the flora of Natal, but this is an error, as that species is essentially tropical African, occurring in Senegambia, the Niger region and British Central Africa, where the natives of Senegambia know it by the name of "Ratt," using the alkaline ash in the fixation of the indigo in the dyeing of their cloth.

Var. PILOSIUSCULA, *Engler* and *Diels*, l.c. 43.

Young leaves subsericeous-pilose, at length more or less clothed with hairs. The variety was collected by Menyhart (No. 892) in the Zambezi region, and is not infrequent about Boruma on mountain slopes. Engler and Diels, having only seen a specimen in the bud stage in the Herbarium at Zürich, query, however, its varietal nature. I do not pretend to know this plant, having seen no specimens.

10.—C. NELSONII,* *Dümmer*, sp. nov.

A tree; second year's branchlets stout, terete, brownish, the bark exfoliating in thin longitudinal lepidote plates; twigs densely leafy, terete at the base, compressed and subangular towards their extremities, with prominent pulvini, pale brown, lepidote and glabrous; internodes 1.5 to 3 cm. long. Leaves opposite or subopposite, sub-imbricate; petiole stout, rarely exceeding 2 mm., minutely puberulous or eventually glabrous, lepidote; leaf-blade broadly elliptic, ovate or obovate, subacute, apiculate or rounded at the apex, invariably rounded at the base (rarely cuneate), 4.5 to 6 cm. long, 2.4 to 3.3 cm. broad, thinly coriaceous, light green and glabrous above, sparingly lepidote on both sides at maturity, the lower surface slightly paler, its midrib prominently raised, and its accompanying 6 to 8 pairs of lateral nerves less raised and more prominent on the upper surface, with inconspicuous ramifications; margin almost plane and slightly recurved. Flowers unknown. Fruit crowded, disposed in clusters of seven to twelve, and borne on glabrous, shining viscid, rich brown pedicels, 5 to 7 mm. long, the fruit narrowly four-winged, elliptic, tipped by the persistent style-base, rounded or emarginate below, 15 to 17 mm. long, 8 to 11 mm. broad, bronze or rich brown, conspicuously shining and glutinous, the wings transparent, 2.7 to 3 mm. long; peduncle glabrous 5 to 12 mm. glabrous, lepidote.

Kalahari Region.—Transvaal; in a mountain gorge near Groote Vley. Pinnaars River, Aug., 1880, W. Nelson, 91 (*Herb. Kew*).

An exceedingly distinct plant differing from all the other South African species by its essentially glabrous habit, and numerous elliptic narrowly-winged glutinous and shining fruit. In the absence of flowers its affinity can scarcely be ascertained, but provisionally it is placed next to C. apiculatum.

11.—C. KRAUSSII, *Hochstetter* in *Flora*, xxvii. ii (1844), 424.

A shrub or fairly large tree attaining a height of 20 m., and a trunk-girth of 2.7 m.; bark thin, dark brown, and eventually furrowed; second and third year's branchlets teretish or sub-compressed, greyish or pale brown, often marked with prominent cicatrices, glabrescent; ultimate twigs compressed, angular, with prominent pulvini, lepidote, minutely pubescent and leafy. Leaves invariably subopposite, much longer than the internodes and borne on a stout grooved puberulous or glabrous petiole, 2 to 7 mm. long; blade obovate, oblong or elliptic, with a subacute apex (occasionally rounded and mucronulate or subcuspidate, rarely emarginate), cuneate from the middle to the base, 3 to 9 cm. long, 1.7 to 4.3 cm. broad, firm in texture, almost wholly glabrous at maturity on both surfaces, the upper dark green and oftentimes shining, the lower much paler and lepidote, with a very prominent midrib and 4 to 8 pairs of lateral veins; margin slightly recurved and undulate, especially towards the apex. Spikes subaxillary, solitary, oblong or subglobose, 2.5 to 4 cm. long, 1.2 to 2 cm. broad, the peduncle rusty puberulous, or glabrous and slightly swollen towards the base, 3 cm. long, slender. Flowers whitish; bracts minute, deciduous. Receptacle externally lepidote, internally villous, 4 to 6 mm. long, the lower narrowly ellipsoid portion equalling the broadly campanulate upper part; disk small, its margin and the base of the style densely pilose; calyx-segments triangular, very acute. Petals oblanceolate or cuneate, obtuse or emarginate, whitish, 1 to 5 mm. long, 0.5 to 0.7 mm. broad. Stamens 10, glabrous, 5 mm. long. Style very stout, scarcely equalling the stamens in length, with an emarginate stigma. Fruit four-winged, shortly stalked, suborbicular, emarginate both at base and apex, 1.75 cm. in diameter, puberulous in the centre, minutely lepidote and glabrous on the wings, yellowish or carmine-red at maturity, the individual wings transversely striate, 6 to 7 mm. broad; pedicel 3 to 5 mm. long; puberulous or glabrous, lepidote.

* C. Nelsonii Dümmer species distincta, glaberrima, fructibus nitidis glutinosissimisque.

Sonder in Harv. and Sond., *Fl. Cap.*, ii, 510 (1862) Engler and Diels, l.c. 28, t. viii, f.A., Fourcade *Rep. Natal Forests* 107 (1889). Sim, *Forest Fl. C.C.*, 222, t, lxix, f.l. (1907) Burtt-Davy in Kew *Bulletin* (1908), 152; Medley Wood in *Trans.* Phil. Soc. S. Africa, xviii, ii, 156 (1908). *For. Fl. Portuguese East Afr.*, 63 (1909). Combretum lucidum, E. Meyer in *Drege Zwei Pfl. Geogr. Doc.*, 174 (1843).

Kalahari Region.—Transvaal, wooded ravines, Rimer's Creek and Makwongwa Forest, Barberton, 900 m., February, 1890, Galpin, 796 (fruit spec.). Shilouvane, Nov., Junod, 1426 (flow. spec.). Houtbosch, Rehmann, 1435 (a distinct, small-leafed form, ex Engler and Diels, l.c. 29).

Eastern Region.—Kentani Div., bushy places, Komgha, 450 m., Jan., 1895, Schlechter, 6214 (flow. spec.). Natal Gerrard and McKen (flow. spec.). Gerrard, 65 (flow. and sterile spec.). Gerrard, 298 (fruit spec.). Rivers between the Umkomanzi and Umzimkulu. Krauss, 253 (flow spec.), Drege a (flow. spec.), Port Natal, Gueinzius, 1862. Cooper. 1170 (fruit spec.). Plant, 27 (flow. and fruit spec.). Inanda, Sept., Wood, 645 (flow. spec.). York, Feb., 1878, Cordukes (flow. spec.). Edge of precipice, Noodsberg, 600-900 m., April, 1889, Wood, 4138 (fruit spec.).

A species abounding in Natal, Pondoland, and Zululand, but sparingly distributed in the Transvaal; it extends into Portuguese territory, where it is known in the vernacular as "Shuanduan," "Chibonduana," or "Chivondwana Kakutu," "Chicacute" and "Umdubu-we-hlati," the latter name being also in use in the Cape Colony‡ for the same species. The foliage assumes a fine reddish tint in autumn and winter, and Sim also remarks that it has a strange scalded-white appearance for some weeks in summer, which he attributes to the effects of drought; the fruit from a distance simulate flowers to a remarkable degree. The wood appears to be little used, though the young supple branches are reputed to be much in request by the Kaffirs for basket-making. Fourçade states (l.c. 108), that the wood is heavy, hard, strong, moderately elastic and compact; annual rings irregular; medullary rays very fine and close; pores moderately large, numerous, distributed irregularly or in short oblique lines; colour bright yellow; liable to rot and get worm-eaten; its properties are :—Weight, 53.1 lb. per cubic foot; relative hardness, 5.4; co-efficient of elasticity, 659 tons; modulus of rupture, 5.05 tons; crushing load, 3.26 tons per square inch. Sim opines that the wood may prove suitable for boards, planking, &c. In Portuguese East Africa the timber is pinkish-white in colour, weighs about 45 lb., and takes a passable surface for rough work; annual rings about 8 mm. apart (Sim, l.c. 121).

R. A. Dümmer.

(*To be continued.*)

‡ "Vaterlands Vilge" is a Dutch name occasionally in use for this species, as also for Eugenia cordata.

HEREDITY AND MUTATION.

THE third lecture delivered by Dr. Gates at the Imperial College of Science, South Kensington, dealt chiefly with the investigations of the mutations of Œnothera. The manner of origin of new characters in evolution was discussed. It was shown that some characters originate suddenly, and others slowly and gradually. Because characters segregate in the Mendelian way, it does not necessarily follow that they originated by a mutation. For example, the palæontological evidence shows that horns were gradually developed independently in the Titanotheria and the Bovidæ, along with other modifications of the skull. Yet the horn-producing character may be suddenly lost, as in hornless cattle, and the hornless condition then Mendelizes when crossed with a horned race.

The mutations exhibited by Œnothera Lamarckiana were described and a sketch was given of the history of this interesting species since its introduction, three centuries ago, from America into Europe. The ranges of variability of the various mutants was discussed, and it was shown that though the extremes of variation sometimes overlap, yet the modes or centres of variation are always distinct, each mutant fluctuating around its own centre. In various cases the external differences are correlated with differences in the structure of the nuclei. The lecturer's investigations have shown that occasional irregularities in the chromosome distribution during meiosis, and hence in the chromosome content of the various germ cells, occur. In this way arise mutants having one or more extra chromosomes, e.g., O. lata with 15 chromosomes (O. Lamarckiana has 14). In the giant mutant (O. gigas), 28 chromosomes are present, and this is correlated with much larger nuclei and cells. Various physiological peculiarities of the giant, such as slower growth and greater susceptibility to frost, are accounted for by the gigantic character of the cells. O. gigas is also peculiar in having 4-lobed instead of 3-lobed pollen grains, and it is suggested that the extra lobe may serve to restore the balance between nuclear and cytoplasmic volume. In triploid mutants and hybrids (21 chromosomes), part of the pollen grains have 3 and part 4 lobes. It is considered probable that 4-lobed grains, in whatever plant they may occur, contain approximately 14 chromosomes, so that an examination of the pollen grains may serve as a guide in cytological studies.

The origin of a red-budded mutation, O. rubricalyx (Fig. 75), from the mutant O. rubrinervis in 1907, was described. It is a progressive mutant, showing an enormous increase in red pigment, the flower stalks, sepals, ventral leaf midribs, and other parts of the plant being suffused with anthocyanin. Morphologically this handsome plant is identical with its parent, O. rubrinervis, but in crosses the new physiological character behaves as a Mendelian dominant. This is one of the few cases of a new character which is dominant in crosses.



Fig. 75. Œnothera rubricalyx (a red-budded mutation from O. rubrinervis).

TREES AND SHRUBS.

AZARA MICROPHYLLA.

One of the few Chilian shrubs that grow thoroughly well in our cold soil at Aldenham is Azara microphylla: the greater number of these shrubs being much too tender to pass through our winters unharmed by frost, unless planted in an exceptionally sheltered position. Planted against an arch or pergola the plant produces a fine effect, as a bush in the mixed shrubbery it makes a pleasing specimen, and it is also adapted for planting on a wall having a north or north-east aspect. A specimen grown as a bush is 12 feet high and almost the same in diameter. The leaves are small, of a deep shining green colour, but paler on the undersides. The flower buds, which are already appearing, are developed on the undersides of the branches; they are very small, but extremely numerous, and their perfume is most pleasing, much resembling that of vanilla. *E. Beckett, Aldenham House Gardens, Elstree.*

SOUTH AFRICA.

REPORT OF THE AGRICULTURAL DEPARTMENT.

The report of the Agricultural Department of South Africa for the period extending from the date of Union (May 31, 1910), to December, 1911, is a massive volume of some 660 pages, full of valuable information, illustrated copiously with excellent plates. It may seem ungracious to preface the praise which is due to the subject-matter by criticism of the policy of presenting such a welter of material in a single volume. Nevertheless, such criticism is necessary for the reason that either the material contained in this huge blue-book has been published elsewhere—in which case republication, even for the benefit of "both Houses of Parliament," is a waste of money; or it has not been published before, in which case it bids fair to be buried alive. Our criticism is, however, not directed against the Union Department of Agriculture, which for aught we know may have excellent reasons for presenting this array of pages to both Houses of Parliament, but we urge it lest this system of magnificence in departmentalism should find favour nearer home. The introductory pages of the report are written by Mr. F. B. Smith, Secretary for Agriculture, and contain an interesting description of the policy with respect to Agriculture which has been adopted since South Africa was united.

The sum expended in 1912 in the development of agriculture within the Union was upwards of half a million pounds, and in addition nearly one hundred thousand pounds were spent on agricultural education.

It is curious to discover that the sum allocated to horticulture is £4,316, that is to say about 1-140th of the agricultural grant. It is, however, incredible that in a country which is already a large exporter of fruit, horticulture should receive so scanty a share of the Government grant. The discrepancy appears to lie in the fact that the several agricultural stations have horticultural lecturers "as prominent features," so that the interests of horticulture are provided for somewhat better than would appear from the table of expenditure which occurs in the introduction.

That the Department has been mindful of horticulture is proved by the fact that since the Union a Division of Horticulture has been established. The duties of the Division are to advise farmers on matters relating to the grading, packing, transport, and marketing of fruit, and to the study of oversea markets. The experimental fruit stations established by the Transvaal are to be continued, but research will, as a rule, be undertaken at the agricultural schools and stations. Mr. Davis, the horticulturist, is an enthusiastic believer in the future of Citrus growing in South Africa. He holds that the best Citrus districts of the Transvaal compare favourably with those of California, and points out that the Citrus industry in the latter country has absorbed a capital of about 30 million pounds, and that the annual yield of Citruses in California is worth about 3 millions. In order to estimate the amount of work in horticulture which is being carried on it is necessary to study not only the report of the horticulturist but also the reports of the botanist, plant pathologist, and entomologist. Such study as we have been able to make convinces us that whilst horticulture is by no means neglected, its interests suffer from a dissipation among many hands; moreover, a blue-book is not an ideal vehicle for the presentation of the results of scientific research. A writer who knows that his work is destined for "both Houses of Parliament" will be tempted inevitably to be discursive. He will wonder, for instance, how many honourable members are Mendelian adepts, and either take their knowledge for granted or tell them text-book things. In short, we do not think this method of publication fair to the experts or their work

The Week's Work.

THE HARDY FRUIT GARDEN.

By B. GOODACRE, Gardener to Sir ERNEST CASSEL, Moulton Paddocks, Newmarket.

PEACH TREES.—Trees which were tied some distance from the wall (as previously advised with a view to retarding the flowering) will require protection. They should be pruned, and the shoots tied in their permanent positions without further delay. Not much pruning will be required if the disbudding and stopping of the shoots were attended to carefully during the summer. It is advisable to leave the young wood in these trees rather plentiful until the fruits are well set. Any surplus growth can be thinned out afterwards without risk of injury. As advised in last week's Calendar with reference to the Fig, the top of the tree should be kept open, the long branches cut away where they are too numerous, and the growths at the bottom and centre of the tree encouraged. Last year's fruiting wood, if it can be replaced by young shoots, should be removed. These latter need not be shortened if they are well ripened, but should be tied in to their full length. If aphis is at all troublesome, it is advisable, just before the flowering period, to spray the trees with a suitable wash. This will be found more satisfactory than using soft soap and paraffin in the old-fashioned way, and less unsightly than lime and sulphur. The newer fruit-tree sprays will be found to cleanse the bark of the trees and destroy the eggs of insects. When this work is completed, the border should receive attention. It is a good plan to leave a rather wide alley for Peach trees—say 4 feet from the wall. The border should be lightly forked over, and a top dressing of leaf mould and fine bone-meal applied. If the borders have sunk too low, they should be raised with a little fresh loam, but the roots should not be so buried as to exclude light and air. All suckers should be cut clean away to the base.

LATE PLANTING.—In general, the best results will not be obtained from trees planted as late as this, though maiden trees will succeed almost as well planted now as in the autumn. The preparation of the ground has already been alluded to in previous Calendars; it may be added that the roots of the trees should not be exposed to drying winds. Trees which are supplied by a careful nurseryman will be packed with their roots wrapped in moss or damp hay, and should be planted immediately on receipt. They will require a little extra care for the first few months until they are well established. They must not be allowed to become dry at the roots, and will need shading from the direct rays of the sun. During dry weather they should be syringed overhead, to prevent the wood from becoming shrivelled.

PLANTS UNDER GLASS.

By F. JENNINGS, Gardener to the DUKE OF DEVONSHIRE, Chatsworth, Derbyshire.

CHRYSANTHEMUMS. To obtain the best results these plants must be treated liberally from the beginning. When they are sufficiently well rooted, they should be potted either singly, or two or three in a pot, using a compost of loam, leaf-soil and sand, with a little crushed bones. They will do quite well in cold frames near the glass, but should be stopped once or twice to encourage a bushy habit. An occasional syringing with an insecticide will keep them free from aphides. They may be put out in sheltered positions at the end of April, and in open situations in May.

PLANTS IN COLD FRAMES.—Every favourable opportunity must be taken to remove the lights so that the plants may become hard and sturdy. Prick up the soil between the plants with a pointed stick, following this with a good watering if necessary. Pinch the points of plants which are becoming too long.

GARDENIA.—Cuttings of Gardenia should be inserted in large 60 sized pots, placing three cuttings around the edge of each receptable. The soil should consist of equal parts finely sifted loam, leaf-mould and sand. When inserted place the cuttings either under a bell glass or in a closed frame, and provide a strong bottom heat. When well rooted shift the three cuttings into 4½-inch pots, and place them either in a stove or a close frame, keeping them well syringed. When the plants are re-established stop the growths and pinch the subsequent shoots when they have made sufficient growth. As soon as plenty of roots are formed shift the plants into 8½-inch pots filled with a mixture of rich loam, leaf-mould, and coarse sand in equal parts, adding a small quantity of peat and a 24 pot full of fine bones and soot to each barrow of soil. Examine the plants for the presence of mealy bug, and syringe them with soluble paraffin if the pest is detected. Gardenias may be planted out in a deep pit, and under this system of cultivation they will furnish an abundance of bloom. The soil must be well drained, and should consist of the same materials as recommended for pot plants.

ACHIMENES.—The old soil should be shaken from these plants, placing the corms in a box or pan of fine soil mixed with plenty of sand. A warm house is necessary until they commence to grow, when they should be transferred to pots or baskets. The advantage of this system over potting them direct is that it enables the grower to make a selection of the strongest corms for furnishing the pots or baskets. For the final potting the soil should consist of equal parts loam, leaf-mould, and coarse sand, with a little peat and decayed cow-manure added. Place the pots or baskets in a warm house, and syringe the plants until the growths are green, at which stage the soil should be well watered. When thoroughly established water the plants with liquid manure made from cow or sheep dung. The following varieties succeed well in baskets:—Carl Woolforth, longiflora major, and Ambrose Verschaffelt. If required for autumn flowering the plants should not be started yet; those forced now in a warm house may be expected to flower during July and August.

FRUITS UNDER GLASS.

By JAMES WHYTOCK, Gardener to the Duke of BUCCLEUCH, Dalkeith Palace, Midlothian.

MELONS.—Melons that were planted last month in the Melon house on narrow, shallow ridges, are growing freely, and roots are appearing at the sides of the ridge. These should be covered at once with two or three inches of suitably prepared, warmed loam. When the plants have reached a desired height on the trellis, they should be stopped, as this will cause them to develop lateral growths, on which will appear female blossoms. These shoots should be stopped at two joints beyond the flowers; this method of culture ensures that the blossoms on all the shoots are ready for pollination at the same time. As soon as the blossoms are expanded, they should be pollinated every day during bright sunshine at mid-day, until a full crop of fruit is set. Two fruits on each plant will be sufficient at this early date; the main leaves should be retained, but all laterals must be pinched off. The fruits of plants trained to a trellis will need support; pieces of garden netting with cord attached may be used for the purpose. Watering should be done with care; the best plan is to wait until the soil is fairly dry, and then give a thorough soaking with warm water, taking care not to wet the collar of the plant. While the fruit is swelling, a little manure water may be added; but when the fruit shows signs of ripening, all watering at the roots must cease. The mean temperature of the pit should be 70°, or 75° on mild nights. In bright sunshine an increase of 10° to 15° may be permitted. Syringing must be subject to weather conditions; on bright, sunny days, the plants may be syringed gently. This, however, should be discontinued when the plants are in flower, or the fruits ripening, when damping the paths and walls in the morning will be sufficient to promote atmospheric moisture. If red spider or thrips are present, the leaves should be sponged with a weak solution of nicotine insecticide. If canker of the stem is feared, the soil around the stem should be kept dry, and a little lime or charcoal dust sprinkled at the base.

CUCUMBERS.—Cucumbers which were planted at the beginning of February are coming into bearing, and should be regularly stopped and thinned, the growths not being permitted to extend beyond one or two joints. Where the fruit is swelling, it is well to retain a leaf at each joint, and the growths should be regulated so as to leave room for the foliage to expand. Overcrowding tends to produce weakly growths and mis-shapen fruits, whilst overcropping would make it impossible to keep up a constant supply for any length of time. When the roots begin to show on the surface of the border, a top-dressing of well-rotted manure and turfy loam in equal parts should be applied. If the border is well drained and the soil porous, it may be freely watered, using occasionally manure water. The mean temperature should be 70° to 75°, according to the weather, and on sunny days the house may be closed early in the afternoon, after a gentle syringing, the temperature rising to 85° or 90°.

TOMATO.—Tomato plants intended for successional fruiting should be placed near to the glass, in a warm, but freely ventilated house. If they are in pots, watering must be done with care, for the plants will not thrive if they are kept too moist at the roots. A top-dressing of some approved fertiliser will be an advantage at this stage. Later, plants should be kept near to the roof glass, and shifted into larger pots as they require it. Before shifting them into the pots in which they will fruit, they should have set their first trusses, or at least have blossomed. If the soil is fairly good, a little manure from a spent mushroom bed will be all that is required for enriching it, for a strong, luxuriant growth in rich soil is not conducive to fruitfulness.

THE FLOWER GARDEN.

By EDWARD HARRISS, Gardener to Lady WANTAGE, Lockinge, Berkshire.

SPRING-FLOWERING PLANTS.—The beds should be examined, and any failures in the plants made good with specimens from the reserve garden. When the surface of the ground is dry enough for the operation it should be stirred with the hoe. Where bulbs are planted in grass land it may be necessary to cut some of the stronger-growing grass with the shears, or it may appear unsightly when the bulbs come into flower.

SEEDLING BEDDING PLANTS.—East Lothian Stocks should either be potted singly or transplanted into boxes as soon as they have made their first rough leaves. As the plants are very liable to damping, an excess of moisture and a close atmosphere must be avoided. Antirrhinums raised from seed sown last month should be shifted into boxes when they are large enough to handle. Should their flowering quarters be occupied with spring-flowering subjects when they need replanting again transplant them then in nursery beds. Other seedling annuals should be pricked out as soon as they require more room, for it is injurious to allow them to remain for too long in the seed pans. Most annuals may be placed in cold frames as soon as they have recovered from the check caused by transplanting. Continue to sow seed as the requirements demand, remembering that it is better to sow small batches at intervals of a few days than a large quantity at one time. Certain soils need special preparation for the growing of annuals out-of-doors. Old potting compost that has been passed through a fine sieve is suitable for mixing with the staple, and should be kept in a dry place ready for use. As soon as the ground is dry enough a sowing of the following annuals may be made out of doors:—Mignonette, Lupinus, Candytuft, Matthiola, Annual Chrysanthemum, Eschscholtzia, Phacelia campanularia, Lavatera rosea splendens, Godetia, Cornflower, Malope, Amaranthus caudatus (Love-lies-bleeding), Centaurea moschatus (Sweet Sultan), Meconopsis cambrica, Poppies of sorts, Coreopsis, and Nigella. In all cases avoid sowing the seeds too thickly.

"MARGUERITE" CARNATIONS.—This type of Carnation has been greatly improved in recent years, being valuable both for massing in beds and or

growing in the reserve garden for furnishing cut blooms. The plants must be liberally treated or they will prove disappointing. The great advantage of annual Carnations is their continuous flowering; when well grown they will bloom continuously till destroyed by frosts. When the seedlings are large enough they should be potted singly in small 60 sized pots and placed near to the roof-glass in a warm pit till they become established. Afterwards harden them off in a cold frame.

THE ORCHID HOUSES.

By W. H. White, Grower to Sir Trevor Lawrence, Bart., Burford, Dorking.

Shading the Plants.—During the past week the sun has been strong enough on several days to raise the inside temperatures very much higher than for some months past, and it has been necessary to shade the inmates of the cool and intermediate houses, and also Phalænopsis, Vandas of the V. tricolor section, Bolleas, Cypripediums, Angræcum, Renanthera, and other genera. All the blinds and shadings should now be fixed in their places, ready for use. It may happen that for a week or two there will be no need to use them, but it is best to prepare. Owing to the comparatively sunless summer and autumn of last year the collection as a whole will have to be rather more closely shaded than usual, as the growths of many Orchids are not so solid after a season of dull weather. At the same time, do not allow the shading to remain down longer than is really necessary. Gradually increase the ventilation in each house whenever the outside conditions are favourable.

Vanda.—Plants of V. teres, V. Hookeriana, also the hybrids Miss Joaquim and Marguerite Maron, have for several months past been resting in the cool house under comparatively dry conditions. They will soon commence to grow afresh, and should be removed to a warm house. Arrange them where they will receive plenty of sunlight without danger of scorching the leaves. Under these conditions they will produce large and highly-coloured flowers. Syringe the plants overhead at least once a day, in bright weather two or three times daily, and keep their surroundings moist at all times.

Ipsea speciosa.—This terrestrial Orchid is a native of Ceylon and possesses tuberous roots. It is well worthy of cultivation in gardens for the fairly large, bright yellow fragrant flowers. The flower spikes are about 1 foot long and each bears several blossoms. The plant will grow and flower well under the same conditions as those afforded to Vandas. It requires plenty of sunlight and an abundance of water at the roots from the time growth commences until the leaves fade. During the resting season the compost should be kept comparatively dry. Repotting may be undertaken when growth starts afresh, employing a mixture of good fibrous loam, sandy peat, and leaf-mould with plenty of small crocks intermixed.

Pleione.—The "Indian Crocuses," as these Orchids are sometimes called, are developing roots from the young growths, and water may be given in increased quantity and supplemented occasionally by applications of weak liquid manure. At the present time the plants should occupy a light position in the Cattleya or Intermediate house, where plenty of fresh air is admitted. Suspend them well up to the roof-glass and spray them overhead several times a day. The cooler growing kinds as P. humilis and P. Hookeriana have passed out of flower and when growth commences afresh should be repotted in a compost similar to that recommended for Thunias. The plants may be suspended close to a roof ventilator in the Odontoglossum house, and should be watered as advised for Thunias. P. yunanensis will also thrive well under a similar treatment.

Calanthe.—The deciduous Calanthes will soon need re-potting. Good yellow fibrous loam should be principally employed as the rooting medium and a quantity should be selected and pulled to pieces and placed where it may become warmed, but not too dry. Cow dung forms an excellent manure for Calanthes, and a quantity should be collected and exposed to the sun to dry, when it should be rubbed through a fine sieve and made quite dry.

THE "FRENCH" GARDEN.

By Paul Aquatias

Nursery Beds.—When Celery is intended to follow the Cauliflowers grown on hotbeds or in the cold soil, the seeds should be inserted without delay. A small hotbed can be made for this purpose from manure obtained from an old melon bed, or in the place where the Cauliflowers were sown early last month. Red varieties are unsuitable for growing on old manure beds; they produce very thin ribs and are liable to attacks of disease when grown in so rich a medium. The last batch of Tomatos for outside work is now inserted on a mild hotbed. Those sown a fortnight ago are ready to be pricked out in a frame filled with good loam, 250 plants per light. Ventilation is given as soon as the plants are well established in their new quarters. If the soil is sufficiently moist, no watering will be needed during the process of growth. The Cauliflowers sown early in February are now pricked out in a frame set on well dug ground. It will be advisable to place three barrow loads of black soil in each frame, and to place the plants close to the glass. The stems of the Cauliflowers should be carefully examined, and all those showing a black mark must be discarded. Another sowing of "All the Year Round" or "Veitch's Autumn Giant" is inserted in a cold frame. The seedlings will not be pricked out, and a thin sowing is advisable, in order to obtain sturdy plants.

THE KITCHEN GARDEN.

By John Dunn, Foreman, Royal Gardens, Windsor.

Chervil.—To keep up a constant supply a sowing should be made on a warm border as soon as possible, and at intervals of three weeks throughout the spring. In hot summer weather this plant runs to seed very quickly, and to avoid this it should be sown on a rich, shady border.

Basil.—This very tender herb should be sown now in pans of light, rich soil, and placed in a temperature of 60°. As soon as the young plants are large enough to handle, they may be pricked into pots of light, rich soil. Four plants will be sufficient for a 6-inch pot. Another sowing should be made in April for planting out on a warm border in June.

Potatos.—The first planting of Potatos may be made in a sheltered part of the garden where protection from frost can be afforded without creating an eyesore. May Queen is one of the best varieties for the first plantation. Potatos succeed best in light, rich soils fully exposed to light and air; damp situations should be avoided. Assuming that the ground has been dug previously, the soil will need little preparation now beyond forking the surface as planting proceeds. The "sets" should be planted in rows drawn at 2 feet apart, allowing a distance of 1 foot between the tubers in the row, covering them with 4 inches of the finest soil. If the ordinary soil is not fine enough for the purpose a quantity of old potting compost or materials from a spent mushroom bed may be used instead. If the tubers have been started in boxes take care not to injure the young shoots in the process of planting. Sufficient space should be left between the rows to allow the air and light to enter freely amongst the plants. It is very important that all tubers intended for future plantations should be laid out singly so that the young shoots may not become drawn. Varieties with a smooth, even skin and eyes level with the surface are more liable to injury after the shoots have sprouted than those with deeper eyes.

Leeks.—Seeds should be sown for the main plantation in drills at 1 foot apart. Earlier plants in boxes will require attention: these may be potted singly in small pots in a compost consisting of two-thirds fine loam and one-third decayed manure. Grow them near to the glass in a cool pit, which should be kept close until the plants commence to make fresh growth, when a little air should be admitted to keep them stocky.

Celery.—If seeds were sown early in February the plants should be ready for transferring to boxes filled with fine rich soil, or if pits are available, they may be transplanted into these at a distance of 6 inches apart, which will permit of their being lifted with a good ball of soil when the time for planting arrives. Plants for the main crop should be raised in a cool pit about the middle of March. Make a thin sowing, as crowded plants are sure to become drawn. Standard Bearer and Matchless White are good main-crop varieties.

Beet.—A small sowing of Egyptian Turnip-rooted Beet may be made on a warm south border as soon as the soil is in a suitable condition. This important crop may require protection later. Another sowing should be made about the end of March to furnish a supply of roots in June. Beet in store should be examined frequently with a view to removing young growths. Keep the shed as cool as possible without subjecting the roots to draught, which may cause them to wither.

THE APIARY.

By Chloris.

Food Requirements.—This season is an extraordinary one, and great efforts will have to be made by bee-keepers if they are to maintain their colonies in a strong and healthy condition. There is no need to labour the fact that the season is extraordinary, for we have only to note that Primroses and Daffodils could be picked in abundance at the end of January, while the Blackthorn was in bloom during the first few days of February. This mild weather causes the bees to consume more than the normal share of the stores, for breeding has already commenced. If great care and watchfulness are not exercised, there will soon be a shortage of food, even if feeding was resorted to last autumn. Every hive should be given a cake of good candy, not less than two pounds, without further delay.

The Hives.—There has been such an abnormal number of wet days without sun to dry the hives, that even good hives have become thoroughly saturated. The quilts should be carefully examined, without interfering with the brood chamber, and where necessary, wet quilts should be removed, dry ones supplied, and also extra covering. Otherwise the early brood may be destroyed by the colder weather which we shall probably experience later.

Purchasing Second-hand Hives.—We all like a bargain, and the beginner may be tempted by an offer of cheap hives. These should not be purchased unless a written guarantee is given that the bees which occupied them did not die of disease, otherwise it will be penny wise and pound foolish to take them at any price.

Last Year's Honey Imports.—The Statistical Office of H.M. Customs state that the total value of the honey imported into this country for 1912 was nearly £36,100. This shows that there is plenty of room for a further increase in the number of bee-keepers in this country, especially when we remember that the quality of this imported honey is not equal to that produced in the United Kingdom.

Isle of Wight Disease.—The season has been very favourable to the spread of this disease, and a careful watch should be kept for signs of it, whether it has been present in the past or not. If the hives are silent on days suitable for activity, the beekeeper may suspect that the colony is suffering from this terrible disease, especially if an abnormal number of dead bees be seen about the entrance. Should the bees be dead and there be plenty of sealed stores, we may safely conclude that the stock perished in consequence of the disease; but every beekeeper will be well advised, in any case, to burn all the dead bees, together with quilts, internal fittings and stored honey. Scatter plenty of lime on the ground on which the hive stood, and for several square yards around the site. The hive itself should be washed with carbolic solution, and scorched in every part with a plumber's blow-lamp.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the **PUBLISHER**, 41, Wellington Street, Covent Garden, W.C.

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS**, 41, Wellington Street, Covent Garden, London. *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

APPOINTMENTS.

TUESDAY, MARCH 18—
Roy. Hort. Soc. Coms. meet. (Lecture at 3 p.m. by Mr. R. Lloyd Praeger on "The Romance of Weeds.")

WEDNESDAY, MARCH 19—
Roy. Meteorological Soc. meet.

SALES FOR THE ENSUING WEEK.

MONDAY AND WEDNESDAY—
Rose Trees, Shrubs, Lilies, Begonias, etc. At Stevens's Auction Rooms, 38, King Street, Covent Garden, W.C., at 12.30.

MONDAY—
Herbaceous Plants and Hardy Bulbs, at 12 noon; Roses and Fruit Trees at 1.30 p.m.; at 67, & 68, Cheapside, E.C., by Protheroe and Morris.

TUESDAY—
Special Sale of Roses at 1 p.m., by Protheroe and Morris.

WEDNESDAY—
Hardy Border and other Plants, Bulbs and Tubers, at 12 noon. Miscellaneous Bulbs and Plants in trade lots at 12 noon; Japanese Liliums in cases at 2.30 p.m. Palms and Plants at 5 p.m., by Protheroe and Morris.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich—42.1°.

ACTUAL TEMPERATURES:—

LONDON.—*Wednesday, March 12* (6 P.M.). Max. 53°; Min. 36°.
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—*Thursday, March 13* (10 a.m.); Bar. 29.7°; Temp. 45°; *Weather*—Dull.

PROVINCES.—*Wednesday, March 12.* Max. 47° Berwick; Min. 44° Yarmouth.

Research Work in Timber and Forest Products.

At a recent meeting of the Royal Society of Arts* a paper was read by Mr. E. Russell Burdon on the "Development of Research Work in Timber and Forest Products." Mr. Burdon described the beginnings of such work on a modest scale five years ago at Cambridge. As a result of these pioneer attempts it became recognised that the field for research into Timber and Forest Products is of vast extent.

At Mr. Elwes' suggestion Mr. Burdon paid a visit to America in order to study the methods of research employed by the U.S. Forest Service. The need for such investigations in the States and in Canada is patent to everyone. Vast forests still exist in those countries, but the scale on which woodlands have been destroyed in the course of their exploitation is also vast. Side by side with efforts toward conservation it is necessary to prosecute researches into the best and most complete means of utilising the forests and their products.

The history of the States Forest Service is remarkable. Twenty years ago it consisted of a handful of men; now it is nearly 4,000 strong. A revolution in public opinion has been wrought, and as a consequence Congress has been able to increase the Forest Reserve area from 15,000,000 acres—its extent at the time of President Cleveland's administration—to over 200,000,000 acres. The Forest Service is organised in a series of sections, one of which is the "Products Branch," and it was with this section that Mr. Burdon dealt in his lecture. The work of this branch is now concentrated at Madison (Wisconsin) and at Chicago.

The object of the Products Branch is to eliminate waste and to develop economy in the usage of the Forests. Officers in touch with the trade gather information with respect to the problems which are met with in the commercial use of timber, and the problems thus discovered form the starting points for the investigations carried out by the members of the staff of the Forest Service. Mr. Burdon gave a full and interesting account of the equipment of the Madison laboratory and of the work that is being done there, work which embraces the discovery of uses to which may be put the waste timber which is now generally used for fuel, the finding of timber substitutes in those cases in which the supply of a given kind of timber is too small to meet the demand, wood preservation, wood distillation, paper and pulp manufacture, and many other aspects of the problems which confront the timber merchant and timber user.

He then passed to consider the important question of the organisation of research work on British timber, a question of obvious importance and of peculiar difficulty because of the fact, which sooner or later must be reckoned with, that British men of science are a race of intellectual anarchists in the sense that co-operation is rare among them, and organised, practical research almost non-existent.

Mr. Burdon pointed out the pressing need for investigation of forest products, and drew attention to the general understocking of our woods. He deplored the fact that no systematic study of the properties and utilisation of British timber has ever been made. Differences of opinion exist on matters which ought to be settled once for all: time of felling, correct methods of seasoning, methods of planting, and trees proper to various soils, are all subjects of cheerful argument, and will remain so till the end of time unless they are subjected to rigorous investigation. As the result of this widespread and deplorable ignorance, waste always, and fraud sometimes, occur. Paving blocks of Spruce substituted for Pine, Scots Pine boards mixed with an order for Larch for colliery trams, Ailanthus substituted for Ash for carriage building, Tulip tree wood sold as Bass-wood—are examples given by Mr. Burdon of fraud or ignorance, and such examples could be multiplied indefinitely.

Mr. Burdon urged that in order to overcome our natural conservatism there must be done here what was done with success in America—an informing of public opinion; and this he hopes will be effected as the result of the Forestry schools now in course of establishment.

In the concluding part of his lecture Mr. Burdon dealt with the work which is being done in the Cambridge School of Forestry, and showed that this school, though young, is already giving a good account of itself. We commend Mr. Burdon's lecture to all of our readers who are interested in Forestry, and in particular to those who are sceptical of the need and value of developing research work in Timber and Forest Products.

* March 5, 1913.

ROYAL HORTICULTURAL SOCIETY.—The next meeting of the Committees will take place on Tuesday, the 18th inst., in the Vincent Square Hall, Westminster. At the 3 o'clock meeting of the Fellows in the lecture-room, Mr. R. LLOYD PRAEGER will deliver an address on "The Romance of Weeds."

NEW PRESIDENT FOR THE ROYAL HORTICULTURAL SOCIETY.—We have reason to believe that the invitation addressed by the Council of the Royal Horticultural Society to Field-Marshal Lord GRENFELL is receiving sympathetic consideration. Assuming for the moment that Lord GRENFELL's decision proves to be favourable, the change in the Presidency may take place in April.

THE WORSHIPFUL COMPANY OF GARDENERS.—Arrangements are being made for a visit of a deputation of the Company to Belgium, provisionally fixed for June 2 to June 9, in order to study Horticulture, and to take part in the International Congress of Agriculture at Ghent. The members will take with them the Company's corporate insignia, and will be everywhere officially received. It is expected that the secretary of the Board of Agriculture and Fisheries, as well as the head of the horticultural branch, will accompany the deputation as the guests of the Master and Wardens. Special pains have been taken to secure important introductions through the Foreign Office, and the Belgian Government are giving all possible facilities. In the course of its itinerary the deputation will inspect (a) the gardens of MM. SANDERS at Bruges, (b) the College of Arboriculture at Tournai, (c) vine growing at Hoeylaert, (d) the famous private gardens of MM. LAMBEAU and DIETRICH, (e) the College of Horticulture at Vilvorde, (f) the market gardens and the asparagus, pulse and other vegetable markets at Malines, (g) the Orchids of M. VULYSTEKE, (h) the nurseries of MM. DE SMET FRERES, and others, near Ghent, and (i) the International Exhibition. The headquarters of the deputation will be at Brussels.

NATIONAL DIPLOMA IN HORTICULTURE—A committee of seven with power to co-opt two additional members has been formed to deal with the question of a National Diploma in Horticulture. The names of the gentlemen who have been invited to serve on the Committee are: The Right Hon. A. H. DYKE ACLAND, Sir HARRY VEITCH, Mr. F. J. CHITTENDEN, Professor J. B. FARMER, Professor F. KEEBLE, Mr. W. L. ROGERS (head of the Horticultural Branch, Board of Agriculture), and Mr. WALTER WRIGHT.

FIELD LABORATORY FOR BLAKENEY POINT.—The naturalists are losing no time in putting the "nature reserve" at Blakeney Point to scientific uses. As indicated in Professor OLIVER's article (p. 97), the oecology of this interesting stretch of coastline is already under investigation. In order to provide for the prosecution of systematic observations a small field laboratory is necessary. It is estimated that a suitable building could be provided for the sum of £150, toward which nearly £50 have been subscribed. An appeal has been issued for further subscriptions, and those who wish to support this most excellent project may send their donations to Professor OLIVER at University College, London.

Perpetual-Flowering Carnation. — A meeting of the Floral Committee of this Society will be held at the R.H.S. Hall, Westminster, on March 18, the occasion of the R.H.S. fortnightly show, for the purpose of adjudicating upon novelties. Arrangements have been made with the R.H.S., whereby the Floral Committee of the Perpetual-Flowering Carnation will meet four times yearly instead of twice only. Novelties to be submitted must be duly entered, regulations concerning which may be obtained from the hon. secretary, Mr. T. A. Weston, Orpington.

The New U.S.A. President's Programme. —In his inaugural address Dr. Woodrow Wilson outlined some of the work which his government propose to undertake. "We have itemised with some degree of particularity the things that ought to be altered, and here are some of the chief items:—A tariff which cuts us off from our proper part in the commerce of the world violates the just principles of taxation, and makes the Government a facile instrument in the hands of private interests; a banking and currency system based upon the necessity of the Government to sell its bonds fifty years ago and perfectly adapted to concentrating cash and restricting credit is an industrial system which, take it on all its sides, financial as well as administrative, holds capital in leading strings, restricts the liberties and limits the opportunities of labour, and exploits without renewing or conserving the natural resources of the country, a body of agricultural activities never yet given the efficiency of great business undertakings or served as it should be through the instrumentality of science, taken directly to the farm, or afforded the facilities of credit best suited to its practical needs; water-courses undeveloped, waste places unreclaimed, forests untended, fast disappearing without plan or prospect of renewal, unregarded waste heaps at every mine."

R.H.S. Trials of Sundries.—The Council has fixed Wednesday, April 23, as the date of this trial. Makers are accordingly invited to send their apparatus to Wisley, and their own assistants may be present to explain and to start the machines, etc., that they may appear to the best advantage from the points of merit claimed for them. Competent judges will be appointed, and their attention will be confined more particularly to the following points:—(1) Suitability for garden work: (a) handwork in small gardens—syringes, bucket and similar light sprayers; (b) knapsack and other portable machines for bush fruit, market garden and house work; (c) wheel machines for market and fruit gardens; (d) power sprayers. (2) Suitability for use with (a) nicotine and similar washes, including soap and oil emulsions; (b) Bordeaux mixture; (c) arsenical washes in suspension—Paris green and lead arseniate; (d) caustic washes for winter work; (e) lime sulphur sprays. (3) General construction: (a) simplicity and accessibility of parts, particularly pump and valves; (b) ease of working; (c) ease of repair or replacement of valves, washers, pump packing, etc.; (d) agitating devices; (e) accessibility for cleaning; (f) durability. (4) Nozzles: (a) fineness of spray; (b) simplicity of construction; (c) ease of cleaning choked nozzles. (5) Cost of pump and accessories. Apparatus should be delivered at Wisley by April 8.

The President of the Board of Agriculture in Holland.—Mr. Runciman is investigating agricultural conditions and methods in Holland. He received at the British Legation at the Hague a long visit from M. Talma, the Dutch Minister for Agriculture. Mr. Runciman has visited the bulb districts round Haarlem, and, accompanied by the Chief Inspector of the Dutch Department, the extensive nurseries at Boskoop. Mr. Runciman has also travelled to Leeuwarden accompanied by the Chief Inspector of the Dutch Department of Agriculture, and visited the great cattle fair there.

Gardening in Austria.—The Gartenbau Gesellschaft, of Vienna, which has done so much for gardening in the Austrian Empire, has established during the last year no fewer than six schools of gardening in different parts of the Empire. In order to obtain the funds necessary for the maintenance of these enterprises the society has opened a school fund, and is appealing for subscriptions from all who are interested in the development of horticulture.

Kew Gardens Employees' Wages. — We understand that the Board of Agriculture and Fisheries has acceded to the request of the Royal Gardens, Kew, Employees' Union for an increase in wages, and granted one shilling per week extra from April 1 next. There was also a request for shorter hours or increased pay for Sunday duty, the present remuneration being 2s. 6d. for five hours, but the Board has not granted either of these concessions.

The Destruction of Stinging Nettles.—Digging out the root-stocks in the case of arable land and continued cutting from early spring onward in the case of grass land, are the methods commonly employed for the eradication of the Nettle. Experiments carried out in Germany and reported in the *Journal* of the Board of Agriculture of March, 1911, appear to show that for dealing with the Nettle pest on a large scale, spraying with 15 per cent. kainit is good practice. After this treatment the Nettle stalks blacken and die off, and the grass smothers them. Kainit contains about 35 per cent. of common salt, and it is possible that the latter substance alone would give good results.

The Food for Nestling Birds.—We have received a reprint of the interesting and suggestive article on the above subject communicated by Mr. Walter E. Collinge to the *Journal* of the Board of Agriculture. Mr. Collinge draws attention to the enormous amount of food consumed by nestlings; an amount so great as to enable the young birds to increase in weight at the rate of from 20 to 50 per cent. per day. To provide for such devouring hunger the mother—a wren—was observed to make no fewer than 169 food-bearing visits in the course of 17 hours. The importance of observations of this kind and the need for further information on the subject is clear. We require to know what birds are to be classed as friends. For it is evident that, although a given kind of bird may be a pest during its adult life, it may be a valuable assistant to agriculture during its nestling stage. From careful observations of nestling starlings, house sparrows, song thrushes, and blackbirds, it appears that they all devour soft food, and particularly insects, slugs, spiders, and worms. It is probable that the same rule holds good for most birds, though doves and pigeons are well-known exceptions to it. In conclusion, Mr. Collinge points out that nesting time is the season during which the destruction of injurious insects is most needed by the cultivator.

Mercury Vapour Lamps for Destroying Insects.—Interesting experiments in the use of the light from mercury vapour lamps in attracting insects to their destruction have been made in tropical Africa (see *Journal d'Agriculture Tropicale*, No. 139, Jan. 31, 1913). The author of the experiments, M. Eugene Abresch von Neustadt, finds that the blue, violet, and ultra-violet rays in which the light is very rich, exercise an extraordinarily alluring influence on night-flying lepidoptera and other classes of insects. The light is placed in the vortex of the air current set up by an electric fan. The insects, attracted by the light, are caught in the current of air and carried against a fine metallic netting. There they stick, and are destroyed subsequently by dipping the wire netting in carbon tetrachloride. Experiments made in the cotton fields of Africa demonstrate that many of the parasites of cotton are caught by this process.

The Poultry Industry in North Wales. —The Agricultural Organisation Society and the National Poultry Organisation Society are arranging to run an "egg and poultry demonstration" train in North Wales during the latter part of April and early days of May next, which it is hoped will be followed by several others in various parts of the country. In this instance the London and North-Western and Cambrian Railways are affording the fullest facilities and co-operating in the arrangements with the two Societies. Full details of the tour are not yet completed, but they will be published in due course. The demonstrations will be on a larger scale than those of three years ago, as additional railway vans are to be used. It is intended to visit about thirty centres in the counties of Flint, Denbigh, Carnarvon, Anglesey, Merioneth, and Montgomery.

Cultivating Ground by Means of Explosives. — We learn from the *Times* that an experiment is being carried out at Hereford by Dr. Herbert Durham, of Hampton Park, in cultivating the soil with the aid of the explosive cheddite. The charge is placed in a series of holes dug 3 feet deep, and the action of the explosion disturbs the soil to the depth of 6 feet or more. The surface is very evenly opened up, and there is no suggestion of the soil being thrown into the air. The doctor treated in two hours a piece of ground it would take a gardener a fortnight to dig, but the cost is said to be much about the same.

Commercial Value of Nicotine. — The unique value of nicotine as an insecticide has largely increased the demand for it. In consequence, greater attention is being paid to the culture of the tobacco plant, which remains the only source of this alkaloid. So much is this the case, that in Switzerland the plant is now cultivated solely for its nicotine, and an example is afforded of what was formerly an unimportant by-product becoming in its turn the principal manufacture. This case is not without a parallel in other industries. Nicotine is present only in traces in the young seedlings, but the amount increases steadily as growth takes place, until about the middle of September the leaves contain nearly 5 per cent. of the alkaloid. At this stage the crop is gathered. The leaves alone are used for the extraction of the nicotine, the rest of the plant being wasted. Recent analyses of this residue indicate that a good deal of valuable alkaloid is thrown away, the stalk and roots both containing nearly one half per cent. of nicotine, and there is as much as 1.27 per cent. in the lateral shoots. Some simple process of extracting the alkaloid from the waste product is required, which at the same time leaves the residues available as fertilisers. The history of past efforts to increase the amount of a particular substance in a plant by careful selection, encourages the hope that similar success will attend the efforts now being made with nicotine.

Publications Received.—***Annual Report of the Department of Agriculture for the Year 1911, with Appendices.*** (South Africa: Department of Agriculture). — ***Present-Day Gardening Series,*** by R. Hooper Pearson.— ***Vol. XVI. Dahlias,*** by George Gordon. London and Edinburgh: T. C. & E. C. Jack). Price 1s. 6d. — ***Home University Library of Modern Knowledge. The Newspaper,*** by G. Binney Dibblee, M.A. (London: Williams & Norgate). Price 1s.—***Report of the Thirteenth Meeting of the Australasian Association for the Advancement of Science.*** Held at Sydney, 1911. Secretary, Mr. J. H. Maiden, Elizabeth Street, Sydney.—***The British Fern Gazette.*** Published Quarterly. March. Edited by Charles T. Druery. (Kendal, Westmorland: The British Pteridological Society).—***Farm and Allotment Book.*** (London: Lloyd's Weekly News.) Price 1d.—***The Carnation Year Book, 1913.*** Secretary, Mr. T. A. Weston, Floradale, St. John's Road, Orpington. Price, post free, 1s. 6d. ***One & All Gardening, 1913*** (London: Agricultural and Horticultural Association). Price 2d.

NOTICES OF BOOKS.

A MONOGRAPH OF IRISES.*

(See Supplementary Illustration.)

THIS is the book of a man who stands outside the circle of professional systematists, to whom monographs are part of their routine work. It was born of the desire "to find plants that would flower in the open in the winter months in Surrey," and the interest engendered "by the fascination of the first Iris flowers that were obtained." But if conceived in the lighter spirit of the lover of flowers, it has, in the course of maturation, grown into a serious volume of systematised knowledge, to a great extent first-hand, or where not so, at least viewed in the light of original experience and observation, up to date, and so many-sided as to be almost exhaustive. No doubt, some pedantic professional will find fault, perhaps because the treatment of the several groups is not sufficiently uniform, or the conception of the species and varieties not quite consistent throughout the work, or the nomenclature not always strictly orthodox. True, monographing genera or families may be carried to the pitch of perfection as an art. There is a pigeon-hole for everything, a key ladder as smooth and symmetrical as if it had been made with ruler and plumb-line, and the names obey the "code" irrespective of convenience and common sense. Such monographs have their uses. They are excellent instruments for "running down" a plant and getting at a name, for arranging a collection, and for reference generally. But they also have their dangers. They tend to fossilise our notions of distinctions and connections, to arrest criticism, and, above all, they are not faithful reflections of the natural relations of the elements that build up the hierarchical structure of the monograph. The author has availed himself wisely of the taxonomic framework which long experience has proved the most practical, but within it he has moved with a laudable freedom

The genus Iris has been monographed before. Alefeld's (1863), Klatt's (1872), and J. G. Baker's (1892) names have in this way become connected with it. Baker's work stands out far above that of his predecessors, in so far as it was based on a larger knowledge of forms, many familiar to him from living specimens, combined with a superior technical treatment as regards classification and exposition. But there were mainly two considerations which made it desirable to attempt another monograph of the genus. In the first place, considerably increased attention was paid to the genus by all classes of gardeners owing to the encouragement which the introduction and growing of Irises had received through Foster's enthusiasm. New species had been added, new hybrids formed, old garden forms began to appear in a new light, and in addition there had grown up a demand for more information concerning the practical question of suitable treatment in the garden. Lynch's *The Book of the Iris* (1904) met to some extent this demand, but it left the more purely botanical problem untouched. Thus the way was open for a book of a wider and deeper scope. This, if done well, had to do justice to the second consideration I have in view, a consideration arising out of the nature of the genus. Irises, if not prepared with special care, make bad herbarium specimens in consequence of the delicate structure of the flowers and the perishableness of their colours. Dried specimens of the ordinary collector's style are therefore almost useless and often misleading. They must be supplemented by fresh material. But Irises also vary very greatly either in the sense in which we call a polymorphic genus variable, or, in the narrower meaning of the term in so far as certain characters fluctuate within the progeny of an individual, or even in the same individual in successive years. Further, not a few Irises have been crossed in cultivation, extending sometimes over hundreds of years, and the hybrids so produced have produced forms which tend to obliterate the limits between the species. Again, some "sport" freely with the same result.

Neither the most careful examination of dried material, nor even observation in the field, could by themselves be relied upon for the unravelling of the tangle. The only way to achieve this was by the addition of the experiment. It is due to the fact that the author has adopted this method that his work is so valuable. As is well known to the readers of this journal, the author has for years been a keen collector and successful grower of Irises. In this he has taken up and worthily continued the late Sir Michael Foster's work. The result of it is impressed almost on every page of the book.

The book is a folio of 245 pages, with 47 coloured drawings by F. H. Round, one coloured plate of seeds by Miss R. M. Cardew and 30 line drawings by C. W. Johnson. It is printed by the Cambridge University Press, and very appropriately dedicated to the memory of the late Sir Michael Foster. It contains an introduction, a short review of the principal literature on the genus Iris, a bibliography running over 4 pages, a section on the structure, distribution, and cultivation of Irises, another on Iris diseases and their remedies, an analytical key to the sub-divisions of the genus, 12 chapters, each dealing with one of the sections of the genus and the species belonging to it, paragraphs on Iris hybrids, the raising of Irises from seed, Orris Root, and finally two lists of unidentified specific names and of plants wrongly described as Irises, and an index. The style is throughout clear and concise, the treatment of type lavishly liberal, and there seem to be remarkably few misprints (e.g., Jaeschhe instead of Jaeschke, Winterbotham for Winterbottom, echatanensi for ecbatanensi).

The paragraph on the structure of the Iris flower is rather too short, and ought to have been supplemented by an account of the structure of the Iris seed, in regard to which the author has, under the sections or species, added much that is new. It would have been still better if he had given us a full sketch of the morphology of the genus Iris. The paragraphs on cultivation, although very short, will be very useful to the growers of Irises, on account of the general hints, and the justification on physiological grounds of the cultural methods which are advocated. The endeavour to trace the behaviour of the Irises in cultivation to the physiological causes which underlie it is apparent throughout the book. It is a combination of scientific spirit and practical thought which is quite refreshing. The bibliography appears to be very full; but, curiously enough, neither Alefeld's nor Klatt's name is in it. They were probably thought to be covered by the reference to "*Botanische Zeitung*. Berlin and Leipzig, 1843 ——." Other authors may similarly be hidden away. The chapter on distribution is interesting, but would have gained by the insertion of a map showing the area which extends as a broad belt from the Western Mediterranean, through the Eurasian continent to Japan and Kamtchatka, and from Alaska southwards to California and Florida. More attention might also have been paid to the vertical range, for it is certainly a remarkable fact that whilst Irises nowhere in Europe rise to altitudes of more than a few thousand feet, they ascend in Central Asia, the Himalaya, and West China to 10,000-14,000 feet, and one of them, I. Potanini, in Kansu to 18,000 feet.

The sections or sub-divisions admitted by the author are mostly identical with those in Baker's monograph, although some of them have undergone a slight modification. The "Nepalenses," however, are a new section, whilst Baker's "Pseudevansia" has become Pseudoregelia. The largest sections are Apogon with 46 species and Pogoniris with 41 species. In the case of Apogon 15 "groups," comprising obviously related, or, in a few cases, isolated species, are distinguished. Of these a conspectus, with short diagnoses, but no key, is given. All the other sections are provided with keys to their species; but why has I. songarica, the last of the "Spuriæ," been omitted from the key of that group? The conception of the species is somewhat elastic, and necessarily so. It is very wide, for instance, in the case of I. spuria, and generally narrow within the Pogoniris section. This want of uniformity partly reflects the conditions as we find them in nature, but may also partly arise out of our incomplete knowledge of many forms. To enter into the details of the classification is here out of the question. It seems very sound and a great advance on previous attempts. It is marked by caution and moderation, and the author is frequently at pains to point out the incompleteness of our knowledge. The number of species admitted is 152, a few of which are only imperfectly known and doubtful, whilst the list of unidentified—and probably in most cases unidentifiable—names runs to more than a hundred. Under each species we find paragraphs on literature and synonymy, distribution, a short diagnosis in Latin, and a more or less elaborate description in English, and finally "observations." The latter are a mine of information for the botanist and the Iris grower, who will find here what he may have missed in the general chapter on cultivation. A column of the most interesting matter might easily be filled by borrowing from and enlarging on those observations; but for this the reader must go to the book itself. A practical point, however, may briefly be mentioned in connection with the taxonomic part of the folio. It is the small type chosen for the headings of the chapters dealing with the species. These headings are the names of the species. They should have been printed in heavier type and numbered consecutively. At the same time the symbols prefixed to the names and indicating whether the species had been grown and flowered in the author's garden or raised by him from seed, might have found a better and more conventional place at the end of the description. Placed as they are, they will puzzle many a reader until he hits on the explanation on p. 20.

Nothing has been said so far about the illustrations of the book, and yet they will be to many the most tempting feature. Forty-eight folio colour-plates, for the most part of exquisite execution in draughtsmanship and print, are no mean addition to a monograph of a single genus. They were, with one exception—Iris Lortetii, which came from France—drawn from plants grown in the author's garden.

The drawing and colouring of the flowers could hardly be surpassed in delicacy, artistic finish, and faithfulness. Unfortunately, the same cannot be said of the foliage of some of the flat-leaved species, though the representation of the transversely opened-out and undulate leaves of the Juno section is unexceptionable. The specimen plate which is issued with this number represents Iris trojana, one of the noblest of the bearded Irises. The colouring of the flower in natural size is particularly fine and faithful, whilst the sketch on the right—though perhaps not an artistic addition—gives a good idea of the characteristic and stately growth of that species. Coloured plates are practically a necessity for a monograph of Iris, and it is well that the Cambridge University Press has been so liberal with regard to them. It is evident that three-colour process printing has made great progress of late, almost the only weak point being now the reproduction of foliage-green. As soon as this can be rendered satisfactorily, coloured illustrations of plants will become much more general, and no doubt also much cheaper.

In concluding, I may be allowed to quote a passage from the introduction to this fine monograph. On p. 3 the author says:—"It is remarkable that there is so seldom any opportunity afforded for working out with living plants in a botanical garden the problems that arise in

* *The Genus Iris.* By W. R. Dykes. Published by the Cambridge University Press. 1913 Price £6 6 0.

the herbarium," and again on p. 4 :—"It is impossible to deny the proposition that no satisfactory definition of a botanical species can be given without a knowledge of the behaviour of the plant under varying conditions of growth, in the wild state and in cultivation, and of the extent to which seedlings may vary within the limits of the species." It would, of course, be utterly utopian to expect that every problem that arises in a herbarium in connection with the definition of a species in the sense indicated could be worked out with living plants in a botanical garden; but what an impetus would be given to a clearer and sounder conception of the species if only a portion of those problems could be solved on those lines, if every herbarium stood in a botanic garden, and every botanic garden had its experimental ground, if no scientific worker were attached to the herbarium who had not served his apprenticeship in the field, or was not given, from time to time, the opportunity of refreshing his mind and widening his view by going back to the limitless experimental ground of nature? One problem solved in this way would shed a flood of light on hundreds of others, for which, for one reason or another, that method is not available. In this sense, Mr. Dykes' monograph may serve as a lesson. *O. Stapf, Kew.*

FORESTRY.

BROWN AND GREEN OAK TIMBER.

What is known as Brown or Red Oak is only found in this country, and in less than a dozen stations here. The cause of the Oak timber turning a rich brown is still a vexed question, though it is generally ascribed to certain properties in the soil, and in some cases is brown from infancy. Mr. Michie, woods manager to His Grace the Duke of Portland, whose experience with the tree is perhaps greater than that of any other person, considers that the particular Oak which produces the brown timber is a distinct species. If this be so it is difficult to understand why the tree is found in so few localities, and only in this country, for it is principally confined to Northamptonshire, Bedfordshire, Hertfordshire, and a few other counties.

In the case of Oaks that have been pollarded, the wood may be brown from decay, and certainly all those at Ampthill in Bedfordshire, where some of the finest brown Oak timber is found, are in such a condition.

There is, however, considerable difference in the colouring and texture of wood produced by pollarded and unpollarded or maiden trees. That of the maiden tree is of plainer figure, and straighter in grain and usually of lighter colour. The timber of the pollard brown or Red Oak is usually of fantastic shapes in graining, with great variety of beautiful figuring, owing largely to the growth being stopped vertically and spread over the butt end.

The timber is of considerable value, ranging in price from 5s. to 10s. 6d. per cubic foot, and as much as from £50 to £100 has been received for a single tree. It is cut into sawn veneers and used for the best class of sideboards and furniture, the veneers counting from 40 to 50 to the inch.

Although of a much darker colour than that of the common Oak, the timber of the Brown or Red Oak is comparatively lighter, specimens from Welbeck weighing 60 lbs. to the cubic foot when seasoned.

GREEN OAK TIMBER.

The beautiful vivid green colour assumed by Oak timber under certain conditions is due to the action of the fungus Peziza aeruginosa. Inasmuch as the colouring matter is quite permanent in the timber, and cannot be destroyed, wood so affected is much sought after by the makers of fancy furniture. Trees growing in damp, shady positions are most often attacked by the fungus, and we have known timber of the Oak when left undisturbed in a damp part of the woodland to assume this colour.

Owing to the scarcity and high price of green Oak timber, experiments have been undertaken to produce the desirable green colour by artificial means, but without success. The wood is remarkably hard, and the beautiful graining of the Oak is shown off to great advantage in this green timber. It is remarkably scarce, the finest examples I have seen being grown in Kent and on an estate in Northern Ireland. *A. D. W.*

A KEW MEMORIAL TO SIR JOSEPH HOOKER.

The memorial to Sir Joseph Hooker, which has been placed in Kew Parish Church, near that which commemorates Sir William, was unveiled on Saturday, February 22, by Lady

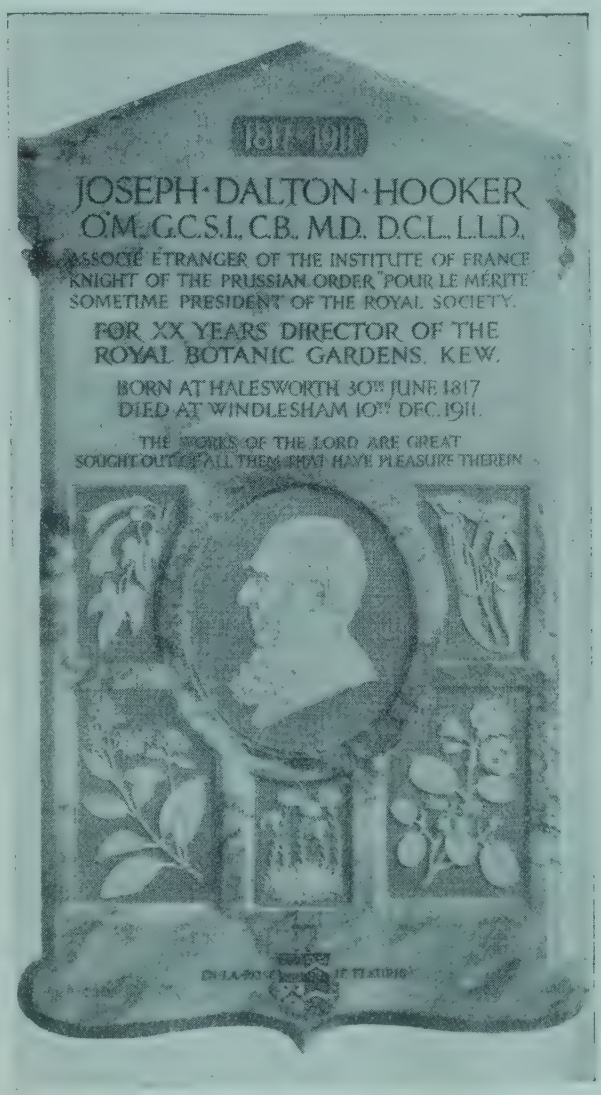


FIG. 76.—KEW MEMORIAL TO SIR JOSEPH HOOKER.

Hooker, in the presence of members of the family. The memorial, of which we publish an illustration, is in the form of a marble mural tablet. Below the inscription are a medallion portrait of Sir Joseph and five panels of plants with which the investigations of the great botanist are closely associated. As shown in our illustration, the portrait, which is by Mr. Frank Bowcher, is an excellent likeness. The floral panels represent the following plants. Above, on the left, Aristolochia and Nepenthes on the right. In the left lower corner Cinchona, commemorating the introduction of that plant into India and Ceylon, and on the opposite side Rhododendron, recalling Sir Joseph Hooker's classic journeys in the Himalayas. In a smaller centre panel Celmisia evolves the memory of Hooker's Antarctic voyage. Below the panels are the family motto, and that of the Most Exalted Order of the Indian Empire.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

The Unfairness of Selling Coke by Weight.—It has appeared strange to me that there has not been a vigorous protest long before this by the gardening world against the iniquitous practice of selling coke by weight. It is so manifestly unfair to the buyer that it is a wonder it has been submitted to for so long. When I was young, coke was universally sold by the chaldron of 36 heaped bushels; that is, it was sold by measurement, and not by weight. I have tried in vain with every new merchant I have dealt with to get back to the old methods, but the trade has made up its mind that a chaldron of coke is 12 cwt.; and so you get it by weight all the same, even if you attempt to deal by measure. I find by experiment that it is easy to make coke retain from 20 to 25 per cent. of its weight of water; that is, that in every ton of wet coke delivered we pay for 15 or 16 cwt. of coke and for 4 or 5 cwt. of water. In these seasons of superfluous wet, 28s. a cwt. for water is an unnecessary expense. It is quite useless to complain; the agent always says (I dare say quite truly): "I buy by weight, and I must sell by weight." Those fortunate enough to live near a gasworks, and able to send for and fetch it from the producer, obtain the article in a dry state and get their money's worth; but this applies to a very small proportion of the gardening community. Most of us have to deal through merchants or agents, and we have no security; coke is usually kept in the open, and absorbs any moisture there is. The rain these last eighteen months has kept it saturated, and everyone has been buying rain with his coke. Moreover, I have observed that it matters not how dry the weather may be, the coke delivered is always wet; I am told it is quite a common thing to play the hose over it in the yards where it is stored, or to use the homely bucket! I do not know whether there are any laws governing the sale of coke; perhaps some reader learned in the law might assist us; but it is only just that such a manifest iniquity should be rectified. No one would think of letting a corn merchant say that a bushel of oats weighs 38 pounds, and thereupon weigh out 38 pounds to you because it is possible to find oats of that weight! You insist on choosing your sample and having the oats measured out to you; you can weigh them for yourself if you like. We burn about thirty tons of coke a year in this garden, in one of the home counties, and I reckon that for many years I have bought, at the lowest estimate, about 6 tons of water per annum. The aggregate annual loss is enormous, and something should be done to protect consumers. Is it not a question in which the Royal Horticultural Society and the Royal Agricultural Society (for it touches farmers, too, with their use of machinery) might move? The method is a very simple one; it is merely to make it illegal to sell coke except by measurement. *R.*

Effects of the Weather in Scotland (see p. 99).—It is interesting to compare notes with your correspondent, Mr. S. Arnott, regarding the effects of the present winter on Roses and other plants. In this favoured part of Wigtonshire the only plants that have suffered to any extent, as far as I can see at present, are Diplacus glutinosus, which, on the rock garden, has been killed within a few inches of the ground, and Hydrangea hortensis, of which all the points of the young shoots have been killed. Owing to the wet autumn the plants continued growing until very late in the season, so that the shoots were unripened when frost appeared. This is most unfortunate, as there will be very few flowers on the plants next season, and in the south-west the Hydrangea is one of the finest shrubs for late autumn effect, as it continues flowering well into November. Calceolaria violacea and C. integrifolia growing on a south wall have both suffered injury a little, but not beyond hopes of recovery. Rambler Roses are in no degree injured, neither are such shrubs as Erica vagans, Veronica Traversii, V. salicifolia, and Olearias, which were mentioned by your correspondent. The following tender plants have all come through the winter in splendid condition:—Cordyline australis, the plants ranging from 6

feet to 20 feet high; Eucalyptus Globulus, 40 feet high; and other species of Eucalyptus; Abutilon vitifolium, Chamærops excelsa, the plants ranging from 4 to 10 feet high; and Embothrium coccineum. All these plants are growing in the open garden, and have had no protection whatever. The fronds of Dicksonia antarctica growing in a sheltered corner of the garden are still green. This noble Tree Fern grows well in the open with only a slight protection afforded the stem and crown in winter. To illustrate the mildness of the past two winters in this part of the country, I may state that a collection of Mesembryanthemums planted two years ago on the rocks at Sea Fish Pond, situated on the west coast of this peninsula, are perfectly healthy. Many of the plants are from 3 to 4 feet in length, and have not suffered harm in the least from the past winters. The greatest amount of frost registered in these gardens was 20° (ground temperature). I think that correspondents should always state whether the temperatures given are registered on the ground or on a screen. *R. Findlay, Logan Gardens, Wigtonshire.*

PITTOSPORUM WITH PINK FLOWERS.—I send you two sprays from Pittosporum. One you will notice has the usual dark claret-coloured flowers, but the other, a seedling, has much paler, almost pink, flowers. Is not this unusual? I see several of this batch of seedlings show colour variation in the flowers, a thing I never noticed before in this plant. *Cornishman.*

WILLIAM FORD.—The late Mr. Ford, whose death was announced in the *Gardeners' Chronicle* of the 22nd ult., was for the last 11 years the manager of the Feltham seed grounds of Messrs. Watkins and Simpson. Before undertaking this charge, Mr. Ford was gardener for 14 years to W. H. Ellis, Esq., Clovelly, Hounslow, where he showed practical proof of his skill as a cultivator of hardy flowers. Whilst he was a skilful raiser and grower of a great variety of hardy plants, Mr. Ford particularly excelled with Antirrhinums, Pansies, and Sweet Williams. The trial grounds of a wholesale seed merchant are, naturally, not so much in the public eye as are those of the retailer, but the most casual observer could not fail to be impressed with the orderliness and general air of well-being displayed in the grounds under Mr. Ford's charge.

STERILISATION OF SEEDS (see p. 121)—Messrs. Pinory and Magron, describing the use of hydrogen peroxide, state that the agent has an accelerating influence upon germination, but this is not all—it has also the effect of enhancing the standard of germination to a very high degree. Sweet Pea seeds that have been sterilised show as much as 20 per cent. advance in germination as well as a more rapid one, and moreover the collar of the seedling is not attacked with root-rot organisms as compared with untreated seedlings. *F. Fisher and Son, Thornton Heath.*

VERONICA TRAVERSII.—I am enclosing photograph (see fig. 77) of a fine specimen of V. Traversii growing in the flower garden here. It is now 20 feet in diameter and 10 feet high, of compact growth, and almost perfect shape. So far as I can learn, this plant was brought here from New Zealand about the year 1875 by the late Sir J. Fergusson, Bart., who was at that time Governor of New Zealand. It is very evident that the climatic conditions and soil of South Ayrshire have suited it well. I see that the height of the species is stated to be 2½ feet only in Nicholson's *Dictionary of Gardening*. The photograph was taken early in July, 1912, and the tree was then in full flower. It is a most valuable evergreen, flowering shrub. *Alfred T. Harrison, Kilkerran Gardens, Dailly, Ayrshire.*

UNDEVELOPED LAND DUTY.—At the meeting of the Horticultural Advisory Committee of the Land Union, held on the 5th inst., a discussion took place on the referee's decision in the case (which was brought by the Land Union on behalf of its members, Messrs. Geo. Jackman and Son)—George Jackman and Son v. the Commissioners of Inland Revenue—in which it was decided that Messrs. Geo. Jackman and Son were liable for Undeveloped Land Duty in respect of land used by them in their business as nurserymen. The following resolution was passed:—"The nurserymen and seedsmen comprising the Horticultural Committee of the Land Union desire, on behalf of the trade, to call attention to the hardship imposed on their industry by the present state of the law in respect of the Undeveloped Land Duty, as disclosed in the recent case 'Jackman and Son v. the Commissioners of Inland Revenue.' They urge that at least so much of their land as is necessarily used as an adjunct to glass houses should be exempted from duty (on the same basis as the site of the glass houses themselves, is exempt), and they are of opinion that the minimum amount required is in the proportion of five to ten acres of land for each acre of glass. At the same time they desire to point out that the duty is in itself unfair to their trade, as it represents an annual fine for using their land for the purpose of horticulture, although every other trade is wholly exempt under all circumstances, and in spite of the fact that some of the trades so favoured employ much less capital and labour in proportion to the land occupied." *C. H. Kenderdine, Secretary.*



FIG. 77. VERONICA TRAVERSI IN KILKERRAN GARDENS.

CULTURE OF CYCLAMEN (see p. 130).—The note by Mr. W. Fitzherbert on the culture of Cyclamen is interesting for it shows a method of growing these plants unfamiliar to me. I have not grown Cyclamen in the manner he describes, and I believe the majority of present-day growers will bear me out in my statement that plants can be well flowered within fifteen months of sowing the seed, thus saving the wintering of large plants. My method is to sow in pans in September, employing a compost of loam, leaf-mould, silver sand, and Sphagnum-moss chopped fine, and all passed through a ¼ inch riddle. The seeds are dibbled in the soil about 1½ inch apart and near to the surface. The pans are placed in a temperature of 60° to 65°, covered with glass, and shaded until the seeds germinate, when every encouragement is afforded to keep the growth soft. Liquid manure is not afforded at this stage, nor for months afterwards. The plants are wintered in the seed pans, which are stood on shelves in a moist atmosphere. In March, when the plants have formed several leaves, they are potted into 3-inch pots, a rougher compost being employed than in the seed pans, but of a similar nature, with the addition of broken crocks and a slight dusting of soot. They are grown in a temperature of 60° until the end of May, when they are gradually hardened in preparation for placing them in frames. Although the frames face south, the light is at all times a subdued one, and the pots are stood on ashes. About July the plants are potted in 5-inch and 6-inch pots in a compost consisting of 2 parts fibrous loam, 1 part leaf-mould, hand-picked and broken with the fingers, with sufficient sand and broken crocks to keep the soil open. The potting is not done firmly and the corm is set with the top merely showing through the soil. The plants are grown on in the frames, slight shade being applied in sunny weather. Air is admitted freely every day until about 3 p.m., when the plants are sprayed with clear water and the frames closed until 5 p.m., when air is again admitted. During wet weather spraying is not necessary. From August to the end of September the plants are exposed to the night air, the lights being removed, except when rain falls. The lights are replaced at 6.30 a.m. By the beginning of October the plants are taken indoors and staged in their flowering quarters, a span-roofed house having a temperature of 55° to 60°. Stimulants are afforded freely from August onwards; liquid manure made from night soil, and diluted liquid farmyard manure, with soot-water occasionally. Flowering commences in November and continues to the end of March. Our plants were raised from seed sown in September, 1911, and have been in flower since early November last. They are a giant strain of less floriferous habit than the smaller kinds. Some of the plants growing in 6-inch pots have over forty flowers expanded. *P. Cork, Lota Lodge, Glanmire, Co. Cork.*

VOLES EATING HOLLY LEAVES. — Common voles are eating the leaves of some Hollies in this garden; they climb the trees (small ones) and eat the leaf right down to the stem, leaving about ⅛ inch. I have had instances before, also in the spring (when food was short, I suppose), but never heard of it elsewhere. *Cornishman.*

YEW-WOODS AND BEECHWOODS ON THE CHALK.—I have read with much interest Messrs Sprague and Hutchinson's notes on this subject in *Gardeners' Chronicle* for November 30, 1912. The authors quote the hypothesis put forward by Mr. Rankin and myself (*Types of British Vegetation*, pp. 170-171) that existing yew-woods on the chalk of south-eastern England may perhaps be regarded as derived from beechwoods containing many Yews, which are the characteristic woodland type of the south-eastern chalk. Messrs. Sprague and Hutchinson say that "it seems more likely to the writers that the reverse process has taken place in many cases: that beechwoods possessing numerous Yews have partially replaced pure yew-woods or chalk scrubs in which Yews are prominent. . . . There can be little doubt that the soil, except in very steep places, is gradually improved by the action of the Yews, so that in

course of time it becomes suitable for colonisation by the Beech." This suggestion raises the whole question of the succession of vegetation on chalk downs, which was, of course, carefully considered by Mr. Rankin and myself. We dismissed the idea of beechwood succeeding yew-wood, for the obvious reason that the shade cast by Yews growing together is too deep for the establishment of Beech seedlings, or, indeed, so far as we have observed, of any flowering plant. The soil below closely growing Yews is, nominally at least, entirely bare of vegetation. Prof. Lindman, of Stockholm, indeed, gives the Yew as a typical instance of a plant under the shade of which nothing else can flourish (see *New Phytologist*, January, 1913). This being so, it is clear that beechwood cannot succeed yew-wood unless the yew-wood has been first destroyed by some other cause. We are, therefore, left with three possibilities: either the Beech and the Yew have become dominant on the chalk in slightly different habitats, or they are alternative dominants on the same type of habitat; or yew-wood represents the modified remains of beechwood after the Beeches have disappeared, by felling or otherwise. We were inclined to adopt the last supposition, but only as a tentative suggestion. Either of the others may be valid, though we found no evidence to support the view that the habitats are different. Messrs. Sprague and Hutchinson say that "the Yew can exist in situations from which the Beech is excluded, namely, on very steep slopes in almost pure chalk, as, for instance, on the western flank of Box Hill." But I have seen beechwood in just such situations, where the white chalk showed on the surface over much of the wood floor, and there must have been a considerable rainwash down the slope. Quantitative data are, however, wanted before one can speak with assurance on the subject. It may be, too, that Beech cannot *colonise* a steep bare chalk slope, and that Yew can. On such a habitat one would expect chalk scrub to be the precursor of beechwood in succession, in some cases with an intermediate stage of ash-wood (*Types*, pp. 168, 173). I think it is clear that the Beech would beat the slow-growing Yew in competition for dominance, provided the two started together, and the habitat were equally suitable, e.g., on a slope under the partial shade of chalk scrub. But if the Yew had already formed a wood, it would hold its ground owing to the deep shade it casts. And if the Yew were an earlier post-glacial invader than the Beech in south-east England, as may well have been the case, the former may have held its own as a dominant in local woods. The whole subject would well repay careful investigation. *A. G. Tansley, Grantchester, Cambridge.*

The Rainfall of 1912 (see page 91).—noticed in your issue of February 8, last, a record of rainfall for 1912, by Mr. Molyneux. Here the past year's record has been 73 inches, and the average for the past 19 years is well over 50 inches. The details below are those furnished by a 5 inch gauge.

Record for Each Year from Year 1894 to 1912

	Ins.		Ins.		Ins.
1894	65	1901	45	1907	54
1895	55	1902	43	1908	50
1896	47	1903	73	1909	55
1897	68	1904	52	1910	56
1898	50	1905	46	1911	60
1899	53	1906	51	1912	73
1900	67				

H. J. Chouls, Gardener to the Lord Aberdare, Duffryn, near Cardiff.

Artificial Roses at the Exhibitions.—I am glad to see that a correspondent has brought forward this subject, for it is one that should be strongly commented upon. I have no objection to artificial flowers as such, but surely they are out of place at a flower show. A strong society, such as the Royal Horticultural, should most certainly set an example to others and exclude them from their exhibitions. I hope exhibitors will unite in protesting.—*Another Exhibitor.*

Crossing Lathyrus luteus with the Sweet Pea.—I was much interested in the paragraph from Mr. Gilbert Errey, of Victoria (see p. 85), upon his cross between L. luteus aureus and a variety of Sweet Pea. I was able to cross a Sweet Pea with L. pratensis, and have kept dried specimens of the hybrid, which were, however, sterile. Although Mr. Errey has been using a species of Orobus as the pollen parent, I note his results in one F_1 generation were the same as mine. Your correspondent asks where he can obtain seeds of Lathyrus tingitanus. They are sold by Thompson and Morgan, seedsmen, Ipswich. *Geo. M. Taylor, Mid-Lothian.*

Obituary.

Walter Tickner.—We learn from our contemporary, *The Florist's Exchange*, of the death of Mr. Walter Tickner, after a brief illness, at his residence, 86, Richmond Street, Rochester, New York, on Saturday morning, February 8, at the age of 77 years. The deceased was for many years a landscape gardener in Rochester. He was born in England, and emigrated twenty-three years ago. Many of the beauty spots of Rochester were designed by Mr. Tickner. He planned Willow Pond and Kodak Park, and he had laid out grounds for most of the prominent people of the city. The deceased leaves a wife, a daughter, and three sons.

LAW NOTE.

DEFRAUDING A NURSERY FIRM.

At the Launceston Police Court recently a defendant was charged with obtaining the sum of 1s. 6d. under false pretences. He sold Carnations representing that he was from Messrs. Veitch and Son, Exeter.

Mr. Wallace Mackay, manager for Messrs. Veitch and Son, said he did not know the accused, who had had no dealings with the firm, and had bought no plants from them. For nearly two years his firm had been communicating with the police to put a stop to this kind of thing, as they had had complaints that people had been selling plants in their name, particularly Carnations. Accused pleaded guilty, and was fined £5, the alternative being one month's hard labour.

SCOTLAND.

QUEEN'S PARK, GLASGOW, AND THE PROPOSED EXHIBITION.

The promoters of an International Exhibition in Glasgow having approached the Town Council for the use of the Queen's Park and adjacent recreation grounds, the question of the legality of giving permission was remitted to the Town Clerk for a report. He has now given an opinion to the effect that the Council cannot legally grant the request of the exhibition promoters, and that any ratepayer or feuar could, by action of declarator and interdict, prevent the park from being so occupied.

PROPOSED WINTER GARDEN FOR EDINBURGH.

It is proposed to erect in Edinburgh a winter garden with accommodation for at least 1,000 people. The site mentioned in connection with the scheme is at the west end of Princes Street Gardens.

CATALOGUES RECEIVED.

T. Rothera & Co., Burton Joyce, Nottinghamshire.—Roses, Hardy Perennials, etc.

H. C. Slingsby, 142, Old Street, London.—Ladders.

Cooper, Taber, & Co., 90, Southwark Street, London.—Agricultural Seeds.

J. H. Heathman & Co., Parson's Green, Fulham, London.—Steps, Trestles, Trucks, Hose and Fittings, and new Folding Scaffold.

E. Fisher & Son, 79, Beverstone Road, Thornton Heath, London.—Sterilised Sweet Pea Seeds.

H. J. Jones, Ryecroft, Hither Green, Lewisham.—Plants and Seeds.

William Watson & Sons, Ltd., Clontarf Nurseries, Dublin.—Garden Flowers and Alpines.

Amos Perry, Enfield.—Hardy Ferns.

Clarence Elliott, Six Hills Nursery, Stevenage.—Alpine and Herbaceous Plants.

Stewart & Co., 13, South Street, Andrew Street, Edinburgh.—Links and Lawn Grasses.

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

March 4: *Present:* E. A. Bowles, Esq., M.A. (in the Chair); Sir J. T. D. Llewelyn, Sir H. J. Veitch, Canon Fowler, Prof. W. Bateson, Messrs. J. T. Ledger, R. Hooper Pearson, E. M. Holmes, J. O'Brien, A. Worsley, G. Wilson, and F. J. Chittenden (hon. secretary).

Odontoglossum × "*Saturne.*"—Mons. H Graire, of Amiens, showed this curious hybrid between O. nebulosum and O. × Harryano-crispum. It closely resembles O. nebulosum in the form of the flowers, which are white, closely spotted with light brown and rose.

Odontonia × "*Cybele.*"—Messrs. Charlesworth & Co. showed this cross between Odontoglossum cirrhosum and Miltonia candida grandiflora. Mr. O'Brien showed illustrations of both the parents, and called attention to the fact that the tubular labellum of Miltonia candida did not appear in the slightest degree, the broadly ovate spathulate labellum of the hybrid being perfectly flat. The colouring of the petals and sepals (broad bands of brown) were from the Miltonia, but the apiculate reflexed tips of the segments were as in Odontoglossum cirrhosum. The dark red lines characteristic of cirrhosum also appeared at the base of the labellum. A certificate of appreciation was awarded to Messrs. Charlesworth.

Narcissus triandrus albus × *N. cyclamineus.*—Mr. Chapman, of Rye, showed this pretty hybrid in which the cup was slightly paler than the perianth. It had a straight corona slightly cut at the mouth, while the perianth was reflexed. It flowered four years after the seed was sown, and Mr. Chapman's experience was that four or five years practically always elapsed between seed-sowing and flowering in these miniature Narcissi.

Hippeastrum "*runners.*"—Mr. A. Worsley showed two small bulbs of a garden Hippeastrum which had developed at the ends of short stolons bearing nodes and roots. Similar growths are normal in Montbretias, and occasionally occur in Snowdrops and Leucojums.

Variation in seedlings.—Mr. G. Wilson showed flowers of two Orchid hybrids from the same seed pod. They were totally different in colour, one being of a brick red the other white with a few red spots.

Epiphytic Cyrtanthus.—Mr. W. E. Ledger showed some bulbs of a new species of Cyrtanthus called C. dendrophilus from its being found wild on trunks of trees, such as species of Podocarpus. Mr. Medley Wood wrote that it rooted among the moss on the trunks on which it grew.

Chionoscillas.—Mrs. Backhouse sent various Chionoscillas with the original parents, Chionodoxa sardensis and Scilla bifolia, for comparison. The first generation showed no white in the filaments such as the Chionodoxa shows, while they were midway in breadth between the two parents. The perianth colour contained just a suggestion of violet in the blue, giving it a different tone from that of the Chionodoxa. The perianth pieces were about equally broad with those of Chionodoxa. The seedlings from these varied a good deal in shade, some being quite blue, others purplish-blue, and occasionally one appeared with white or whitish filaments, but these were usually coloured like the Scilla. The flowers in the second generation were mostly broad petalled.

Narcissus with frilled trumpet.—Mr. Bowles showed flowers of a white Narcissus with a frilled corona, and remarked that when the plants were newly divided the frill was, as a rule, not developed until two or three seasons of growth had been passed and the plants had become established.

HORTICULTURAL CLUB.

March 4.—On this date at the Hotel Windsor, the Horticultural Club held its monthly dinner, Mr. W. B. Cranfield presided, and there were thirty-two members present. After the dinner Mr. Edward A. Bunyard gave a lecture on "The Introduction and Development of Some of our Hardy Fruits," illustrated by a large number of lantern slides.

The lecturer dealt briefly with the history of fruit culture in the most remote times, and interesting slides of the sculptures of Nineveh were shown on which Figs, Grapes and Palms were clearly delineated.

Egypt, Greece, and Rome were briefly touched upon, and a special point was made of the various types of Apples mentioned by Cato as representing classes such as we now call Calvilles, Rambours and Reinettes. These distinct classes were shown to exist even in those early times.

Some stress was laid upon the period of the Moorish occupation of Spain when, despite the chaotic state of civilisation of Europe generally speaking in the 12th century, the varieties of fruits and knowledge of their cultivation were preserved by the Arabs, as set forth in much detail in the extremely interesting *Book of Agriculture* by Ibn-El-Awam.

Passing from a consideration of Feudal times to the renaissance of the 16th century, the example of France, and particularly of De La Quintinye, was noted, and his influence upon English culture emphasised.

The lecturer then dwelt on various varieties of fruits, and showed their migrations and development in some detail. The probability of their origin by mutation rather than by the accumulation of small fluctuations was discussed. Of special note was the evidence which was provided by philology as to the migrations of fruits. The Apricot was a curious case where the letter "a" remains as a part of the Arabic participle Al, added on to the Latin "præcocia." The Fig is a case where the word used is the same all over Europe. Many slides were shown of the curious sports which have appeared at different times in various fruits, such as the flat Peach (Peen-to), of China, and the interesting Cherry, "a bouquet," where the pistils are multiplied and result in several cherries being produced on each stem. In view of a current idea that cultivation has been the cause of many varieties it was remarked that some plants such as Prunus spinosa, Pyrus malus baccata and Fragaria vesca, though cultivated, have never produced any improved varieties except by means of hybridisation.

In the discussion which followed the lecture, in which Messrs. Chas. T. Druery, C. Pearson, W. B. Cranfield, and a visitor, Mr. Leonard Coates, from California, took part, Mr. Druery strongly supported the "mutation" theory, in view of his long experience of such phenomena in connection with British Ferns. He also endorsed the lecturer's opinion that these sudden changes could not in our present state of knowledge be attributed to culture or, indeed, to any definite cause whatever.

Mr. L. Coates gave some interesting data concerning the introduction of fruit into North America, and California in particular. Experiments aided by the American Government are being carried out in America with a view to increasing the number of hardy varieties, capable, by virtue of their hardiness, of being grown to advantage over much wider areas than at present.

BRITISH GARDENERS'.

FEBRUARY 21.—A meeting of the British Gardeners' Association was held at Carr's Restaurant on this date to consider the position of the L.C.C. gardeners. The chairman (Mr. E. F. Hawes) said that "split duty" was a great grievance as the men had to break up their day and were deprived of proper home life.

The secretary, Mr. Cyril Harding, said that suggestions had been made for the conditions of work to the County Council. They were that in the summer months the time be from 6 a.m. to 5 p.m., with half an hour for breakfast and an hour for dinner, except Saturdays, when the time for leaving would be 1 p.m. In the winter months the hours would be from 7.15 a.m. to 5 p.m., with half an hour for breakfast and three-quarters of an hour for dinner, and 7 a.m. to 1 p.m. on Saturdays. This meant a 54-hour week in the summer and a 48-hour week in the winter. If required to work on Sunday or any part of Sunday, or on Bank Holidays, pay should be at the rate of time and a half. No man should be called on for less than four hours at time and a half. That there should be two classes of gardeners only—gardeners and under-gardeners—and that the gardeners should commence at 31s. a week, rising to 35s. by 1s. annually, irrespective of certificates, and under-gardeners commence at 30s. a week, rising to 33s. a week by 1s. annually. That all gardeners and under-gardeners should have a suitable uniform provided for them, that no man should be compulsorily transferred, or suffer reduction of pay through refusing transference; and that boy gardeners, if compelled to attend evening class, should attend horticultural classes, and if compelled to take time off for these should not have wages deducted.

LINNEAN.

DEVELOPMENT AND INHERITANCE OF SEXUAL CHARACTERS.

MARCH 6.—At a meeting held on this date, Mr. Geoffrey Smith, M.A., gave a lecture on this subject of which the following is a summary:—

"Secondary sexual characters may be divided into two classes, (1) those which are correlated in their development with the primary sexual organ, ovary, or testis, and (2) those which are not thus correlated, but which develop independently of the presence of the gonad.

"Corresponding to these two classes we find that abnormal secondary sexual characters may arise in an individual in two ways—(1) by *differential correlation*, where abnormality of the gonad causes abnormality in certain secondary sexual characters, (2) by *hereditary transference*, where certain secondary characters are transferred in inheritance from one sex to the other without the primary sexual organs being in the least affected.

"In dealing with the first class of cases, the most commonly accepted view as to the mechanism by which the correlation between gonad and secondary sexual characters is brought about is embodied in the *hormone theory*, according to which the gonad produces a specific hormone which stimulates the development of certain characters. Objections will be raised to this theory in its simple form, chiefly owing to certain phenomena occurring in Parasitic Castration, and an alternative theory of *metabolic stimulation* is proposed, according to which the gonad by feeding on certain specific substances in the blood, stimulates the over-production of these substances by the metabolic organs, and so brings about changes in the composition of the blood which act as a stimulus on the secondary sexual characters.

"The last topic of discussion is the factorial composition of the individual in respect of the sexual characters, and the question of the determination of sex.

"Evidence is forthcoming chiefly from two sources, breeding and cytology. It will be argued that it is impossible, at present, to frame a scheme which will include all the known facts, without making both sexes heterogametic, and consequently assuming that some form of selective fertilisation must occur.

"Evidence in favour of the occurrence of something tantamount to selective fertilisation will be produced in the case of hybrid pheasants, where the preponderance of males over females cannot be accounted for by a selective death-rate occurring at any but an exceedingly early period of development."

SCOTTISH HORTICULTURAL.

MARCH 4.—The monthly meeting of this Association was held at 5, St. Andrew Square, Edinburgh, on this date. Mr. King, the president, was in the chair, and there was an attendance of 75 members.

A paper on "Dry Wall Gardening," by Mr. Thomas Smith, Coombe Court Gardens, Kingston Hill, Surrey, was read by the secretary. Dry walls, Mr. Smith said, as a means of growing certain kinds of rock plants, had much to recommend them, as they were well exposed to the sunshine, and the plants were practically immune from the baneful effects of excessive moisture in winter. Moreover, the dry wall could be introduced where there was not room for the more elaborate type of rock-garden. The material necessary for its construction, too, was generally easily procurable, rejected paving stone, or even ordinary brick, serving the purpose where better material could not be obtained. The best material, however, was rough unhew stone, direct from the quarry, in blocks varyi in thickness and length. The most desirab form was the retaining wall, the mass of s behind yielding a constant supply of moisture the roots of the plants. A double-faced wa could also be adopted in order to form a bou dary, as was done at Carberry Towers, whe such a wall bounds a geometrical garden. building the wall the stones should be bedd with soil, joints from 1 to 2 inches being le between them according to their size, and t plants inserted in the course of its erectio as much larger specimens could thus used, and their roots spread out better. The co rect batter for the wall was 1½ to 2 inches to eac foot in height, and if the soil is of a non-poro nature drain pipes should be laid through th base, with some rough rubble behind. M Smith referred to the advisability of drav ing up a colour scheme before planting, as the was nothing more disappointing than a pr miscuous arrangement of the plants; he al gave a list of suitable subjects for planting.

The exhibits were:—Camassia esculenta, va præcox, from Mr. R. H. COCKBURN, Gartmo Gardens, Perthshire; group of Rose "Rich mond," from Messrs. TODD and Co., Edinburgh and Rhododendrons from the open shown by M A. JOHNSTONE, Hay Lodge, Edinburgh.

LEEDS GARDENERS' BENEFIT.

FEBRUARY 27.—The 46th annual dinner of th members of this Society was held on the for going date, at the Griffin Hotel, Leeds. M George Gray, of Messrs. James Backhouse an Sons, Ltd., York, presided over a good attend ance.

The Society has had a successful year. Th total income during 1912 amounted to £21 8s. 4d., and the expenditure to £183 6s. 9½d the balance of £32 1s. 6½d. bring the amount o the total funds up to £1,906 3s. 9d. The su paid in benefits totalled £142. The payment for management expenses were £32 1s. 3½d., an grants from the Distress Fund amounted t £4 16s. There has been a slight decrease i the amount received in honorary subscriptions.

ROYAL.

FEBRUARY 27.—At the meeting of the abov society held on this date (the President, S Archibald Geikie, in the chair) the papers rea included the following:—(1) Prof. F. KEEBLE Dr. E. F. ARMSTRONG, and W. N. JONES: "Th Formation of Anthocyan Pigments in Plants." Part iv., "The Chromogens." The results o the experiments described in this paper len support to the hypothesis that the anthocya pigments of plants are produced by the oxida tion of colourless chromogens. Under certai conditions a coloured flower may be caused t reverse its pigment-forming process and to re duce the pigment which it contains to a colou less state. By again changing the condition the pigment-forming mechanism may be mad to resume activity and to give rise to pigment identical in colour with those of the normal in tact flower. Whether the flower forms pigmen or remains colourless depends on the degree o hydration of its tissues. If water be withdraw from the tissues oxydase activity falls off, th activity of "reducing-bodies" becomes increase —actually or relatively—pigment formation i inhibited, and the pigment in existence alread is reduced to chromogen. The flower become colourless. If water be supplied to the de colorised tissues oxydase resumes its activit and chromogens are oxidised to pigments. (2 W. N. JONES: "The Formation of the Antho cyan Pigments of Plants." Part v., "Th Chromogens of White Flowers." This paper which deals with the biochemistry of the pig ment-forming mechanism contained in whit flowers, is a continuation of the work sum marised in part iv. of the present series of com munications. As shown in the latter paper, th pigments of flowers may be reduced to the stat of colourless chromogens and may be re-forme by artificial means from those chromogens. I the present paper it is shown that chromogen may be obtained from some white flowers an may be caused by similar treatment to give ris to pigments.

GARDENING APPOINTMENTS.

MR. H. DEAD, previously at The Laurels, Haywards Heath, Sussex, as Gardener to A. H. DUNSMURE, Esq., Hengrwst, Dolgelly, North Wales.

MR. W. E. ANDERSON, for nearly six years Gardener to J. S. WHITE, Esq., St. Margaret's, Weybridge, and Fishbourne House, Isle of Wight, as Gardener to JAMES KNOTT, Esq., Close House, Wylam-on-Tyne, Northumberland.

MR. F. WHICKER, late Gardener to Colonel Kemmis, C.M.G., Everton Grange, Lymington, Hants, as Gardener to E. E. LEIGH-WHITE, Esq., Bantry House, Bantry, Co. Cork, Ireland.

MR. D. ALLAN, for the last 10 years Gardener at Acryse Park and Knowlton Court, Kent, as Gardener to EDWIN BOLTON, Esq., Carbrook, Stirlingshire, N.B.

MR. GEO. H. EMMETT, for the past 2½ years Foreman in The Hendre Gardens, also formerly at Rolleston Hall, Mentmore, The Woodlands, and The Rocklands, as Gardener to F. MARTIN, Esq., The Lindors, St. Briavels, Gloucestershire.

MR. F. GAME, Gardener at Hebers Mount, Ilkley, and previously General Foreman at Nidd Hall Gardens, Ripley, Yorkshire, as Gardener to Sir JOHN DEWAR, Bart, M.P., Dupplin Castle, Perthshire.

[Thanks for donation for R.G.O.F. box.—EDS.]

MR. A. J. MORGAN, for the past two years General Foreman at Rooks Nest Park Gardens, and formerly Foreman at Barrow Court, Bristol, as Gardener to J. D. BIRCHALL, Esq., Bowden Hall, Gloucester, and enters upon his duties March 25.

MR. J. W. FORSYTH, for the past year Foreman at Taymouth Castle Gardens, Kenmore, Perthshire, and previously Foreman at Ardarroch Gardens, Garelochhead, and at Rossdhu Gardens, Luss, N.B., as Gardener to WM. MACLEOD, Esq., Markyate Cell, Dunstable.

MR. J. D. ROBERTSON, for the past eight years Superintendent of the Hammersmith Borough Council's Cemetery, as Superintendent of the Corporation of the City of London Cemetery at Ilford, Essex.

MR. S. CLARKE, for nearly four years Foreman in the gardens at Cole Orton Hall, Ashby-de-la-Zouch, as Gardener to N. C. C. Cockburn, Esq., Harmston Hall, Lincoln.

MR. J. A. PAICE, for the past fourteen months as Gardener to P. F. Warner, Esq., Caring House, Leeds, Maidstone, and previously two and a-half years as Gardener to Vice-Admiral Sir John Jellicoe, "Thornton," Harrow Weald, as Gardener to D. Norton, Esq., "Laurel Dene," Hampton Hill, S.W.

MR. JOHN CHISHOLM, until recently Foreman in the gardens, Flichity, Daviot, Inverness-shire, as Gardener to W. Beardmore, Esq., at the same place.

MR. T. ELDER, at present Foreman in the gardens, Cuckfield Park, under Mr. H. MacFadyen, and previously at Newton Don, Berwickshire, and Auchmore, Perthshire, etc., as Gardener to W. E. Tower, Esq., Old Place, Linfield.

DEBATING SOCIETIES.

READING GARDENERS'.—At a largely-attended meeting held on February 24, in the Abbey Hall, Mr. Montagu Allwood gave an address on "The Perpetual-Flowering Carnation." The lecturer claimed that this type of Carnation was the most profitable flower of the day, and good blooms always fetched high prices at Covent Garden Market. Plants should not be pruned with the idea of making them strong. December, January, and February were the best months for raising fresh plants; autumn-struck plants do not develop well. The raising of plants from seed and full cultural details were also given.

BRISTOL AND DISTRICT GARDENERS'.—The fortnightly meeting of the above Association was held on February 27, at St. John's Parish Rooms, Clifton, when Mr. Thoday presided over a large attendance of members. A lecture on "Rose Growing" was delivered by Mr. Basham, Newport. Prizes for the evening offered by Messrs. Mansell and Hatcher, Rawdon, York, for two Orchids in bloom. The first prize was awarded to Mr. Woodward, the second prize to Mr. Scott, and third prize to Mr. Baston.

BATH GARDENERS'.—This Society held their usua fortnightly meeting on February 24. Mr. T. Parrott presided, supported by Mr. G. Garraway (Vice-Chairman). The Chairman remarked that the Council had granted the Society the use of the Pump Room Annexe for the use of the Chrysanthemum Show to be held on November 5 and 6. Mr. Parrott then introduced Mr. J. Franks, who gave a lecture on "The Cultivation of Carrots." A discussion followed.

CHELMSFORD AND DISTRICT GARDENERS'.—The tenth meeting of the winter session was held in the East Anglian Institute of Agriculture, when E. H. Christy, Esq. (the president), presided over an attendance of about 60 members. Previous to the lecture, an exhibition of bulbs was held. The entries were quite up to the average, and the quality of the blooms of such bulbs as Narcissi, Tulips, and Hyacinths reflected great credit on the competitors. The prizes were awarded in the following order:—Mr. Ryman, Mr. Hunt, Mr. Allan (an amateur member), and Mr. Gamble. Mr. H. Brown showed an excellent specimen plant of Cineraria in full bloom. Mr. A. Malins Smith, M.A., Principal of the Agricultural Institute, delivered a lecture on "The Production of New Varieties of Potatos," which was illustrated with lantern slides. In the course of his remarks Mr. Smith dealt with the subject of cross-fertilization. The lecturer gave a brief survey of the work that was going on at Cambridge in order to obtain a disease-proof potato.

WARGRAVE GARDENERS'.—A good number of members met on Wednesday, February 26, to hear a paper on "Mushroom Culture," which was delivered by Mr. A. Blandford, Greenlands Gardens, Henley. The lecturer first described what was usually considered the most suitable kind of place for growing Mushrooms, and then went on to speak of the preparation of the manure, the heat required, testing the beds, spawning, watering, and treatment generally. Outdoor beds were next described, as was also the cultivation of Mushrooms in boxes, which was a good method for summer use, as it was much less trouble than inside cultivation. The French system was also described. A capital discussion ensued, in which a good number took part. Mr. Pope showed a well-flowered group of Imantophyllum.

READING GARDENERS'.—There was a large attendance of members at the fortnightly meeting held in the Abbey Hall recently. The President occupied the chair. Mr. J. T. Tubb, Bear Wood Gardens, gave a lecture on "Roses." The best season for planting and transplanting Roses was, said the lecturer, from October onward; he preferred the months of October and November. Careful attention should be given to planting, always deferring the operation until the ground is suitable, for no greater mistake could be made than to plant in wet soil. The subjects of stocks, pruning, disbudding, and protection in winter were all dealt with, and advice given with reference to the eradication of insect pests.

CHESTER PAXTON.—The third of a series of lectures was given at the Grosvenor Museum on the 1st inst., when Mr. John Weaver read a paper entitled "The Loganberry: Its History, Use, and Culture." This comparatively new fruit, the lecturer explained, was raised in America by Judge Logan in 1884, and introduced into England in 1893, since when its cultivation had rapidly increased. Mr. Weaver gave useful hints on the propagation, pruning, training, manuring, etc., of this fruit, and recommended its extended cultivation.

THE WEATHER.

THE FOLLOWING SUMMARY RECORD of the weather throughout the British Islands, for the week ending March 8, is furnished from the Meteorological Office:—

GENERAL OBSERVATIONS.

March 11, 1913.

Weather.—Over a large area in the north and west of the kingdom, and also at a few places in the south, precipitation occurred daily, but in the eastern and south-eastern districts a considerable portion of the week was fair to fine. During the latter half of the period hail, sleet, and snow occurred in many northern regions, and on Saturday showers of sleet and snow fell in the south and south-east. Thunder and lightning were experienced on several occasions in some parts of Scotland, and on the 6th and 7th at Foynes, while lightning only was observed over a wider area.

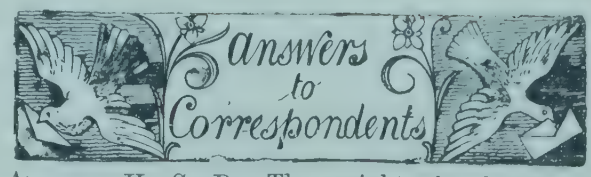
Temperature was above the average, the excess being as much as 5.7° in England E. and 5.1° in the Midland Counties, but no more than about 2° in Ireland and the north and east of Scotland. The highest of the maxima were registered at most stations on the 4th, and varied from 58° in England E., the Midland Counties, and Ireland N., to 54° in Scotland N., and 53° in Scotland W. The lowest of the minima, which occurred generally on the 8th, ranged from 18° in Scotland E. (at Balmoral) to 32° in England N.W., and to 39° in the English Channel. The lowest grass readings were 15° at Balmoral, 18° at West Linton, 19° at Crathes, and 22° at Rauceby, Cheadle, Marlborough, and Wisley.

Bright sunshine exceeded the average, the percentage of the possible duration ranging from 46 in Scotland E. and 44 in England N.E. to 31 or 32 in Ireland and the south-west of England and to 29 in Scotland N. The highest percentage at any individual station was 57 at Cockly Park, Morpeth, and the lowest 20 at Balta Sound. In Scotland E. the mean daily duration was as high as 5 hours, and in England N.E. 4.9 hours.

THE WEATHER IN WEST HERTS.

Week ending March 12.

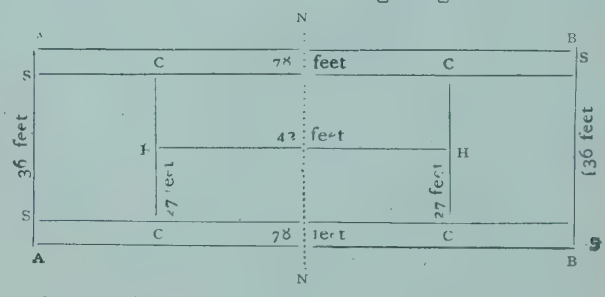
Four consecutive weeks of dry weather.—This was another warm week, but not as unseasonably warm as the one immediately preceding it. On the warmest day the temperature in the thermometer screen rose to 56°, and on the coldest night the exposed thermometer registered 14° of frost. The ground is now 2° warmer at 2 feet deep, and 1° warmer at 1 foot deep, than is seasonable. Rain fell on three days, but to the total depth of less than a tenth of an inch. On one of those days (the 8th) there occurred slight falls of snow. The present dry period has now lasted over a month, during which time less than half an inch of rain has fallen. No measurable quantity of rainwater has now come through either of the percolation gauges for more than three weeks. The sun shone on an average for 3¾ hours a day, or for a quarter of an hour a day longer than is usual in the early part of March. On the sunniest day the sun shone brightly for 8½ hours, but on two other days scarcely any sunshine at all was recorded. The wind has been, on the whole, rather high, but in no hour did the mean velocity exceed seventeen miles—direction W.S.W. During the last seventeen days the wind has for only three hours come from any point of the compass between north and east. The average amount of moisture in the air at three o'clock in the afternoon exceeded a seasonable quantity for that hour by 1 per cent. A selected bush of the Wild Hazel first showed an open fertile flower on the 11th inst., which is nineteen days later than its average date in the previous twenty-two years, and twenty-four days later than last year. *E. M., Berkhamsted, March 12, 1913.*



APPLES: *H. S. D.* The weight of a barrel of apples averages 130 lbs.; a case of the same fruit is approximately 40 lbs.

CUT FLOWERS FOR EXHIBITION PURPOSES: *H. E. Wootton.* You ask for a list of the best flowers suitable as cut blooms for exhibiting in a competitive class. Cut flowers include subjects ranging from annuals to Orchids; but we imagine you mean hardy flowers, in which case the selection may be made from Roses, Sweet Peas, Ten-Week Stocks, Lilium candidum, Delphiniums, Coreopsis grandiflora, Gaillardias, annual Chrysanthemums, Larkspurs, Malope, Lupins, Scabious, Candytuft, Clarkia, Godetia, Cornflower, Linaria, Poppies, and Salpiglossis. These plants may all be had in flower about July. Certain of them may be raised from seed, which should be sown at once.

DIMENSIONS FOR A TENNIS COURT: *J. P.* A tennis court for the single game is 27



feet wide and 78 feet long; and for the double game 78 feet long and 36 feet wide. The posts for supporting the net should be placed 3 feet beyond the sides. The service lines run parallel to the net, and are 21 feet distant from the same. The net should be 3 feet high in the centre, and 3 feet 6 inches at the posts, which are put 3 feet outside the line to allow of the net dropping. Croquet ground next week.

EMPLOYMENT IN THE LONDON PARKS: *F. T.* The weekly hours of labour in the L.C.C. Parks are 48 in winter and 54 in summer. Forms of application for employment as under-gardener or under-keeper may be obtained from the Chief Officer, Parks Department, 11, Regent Street, S.W. The age limits are from 25 to 40 in the case of under-gardeners, etc. Appointments as gardeners are, as far as possible, filled by promotion, from the ranks of under-gardeners, of such men as pass the examination in practical horticulture, held by the Royal Horticultural Society, and in the other ranks by promotion.

EUCHARIS DISEASED: *H. R. F.* The bulbs submitted by you for examination were almost completely destroyed by the Eucharis mite. We would suggest that the best course will be to destroy the infested plants, and thoroughly dress the staging or frame with a strong paraffin emulsion, applied as hot as possible.

EVERGREEN OAK LEAVES: *E. Y.* The foliage has been injured by a mining maggot of a small moth. The eggs are deposited on the leaves in June; spray the foliage with an insecticide in May next.

INSECTS IN FERNERY: *L. G.* The insects attacking your ferns are weevils. Bisulphide of carbon or "Vaporite" may be employed for destroying the grubs that are below the surface of the soil, but there are various ways of trapping the beetles. As they feed chiefly by night, and have the habit, like most other weevils, of dropping to the ground on being suddenly disturbed, it is desirable to group the plants together during the day, standing them on a large, greased sheet of white paper or calico. After this has been done enter the house at night-time with a bright light, and tap the pots or shake the plants whilst holding them to one side, when the weevils will fall on the sticky surface and may be caught easily. Another method is to trap them with pieces of some vegetable, such as Potato or Carrot.

INSECTS IN SOIL: *E. W.* The small samples of soil which you submitted for examination had

been so completely desiccated during transit that there was no trace of either insect or worms found in them. We gather from the brief description that you have given of the insects that they are probably a species of Springtail (? Collembola sp.). If such insects as these are present in the flower pots we would advise you to plunge them into water heated to a temperature of 91° F., and allow them to soak in it for 12 hours.

LUCERNE: *A. R. G.* If the Lucerne is to be sown broadcast the usual quantity per rood is 5 lbs.; if sown in drills it is customary to use 3½ lbs. of seed per rood.

NAMES OF PLANTS: *Isolated.* 1, Tydaea insignis; 2, Selaginella viticulosa.—*A. W. S.* 1, Begonia hydrocotylifolia; 2, B. incarnata.—*F. J.* 1, Pteris tremula; 2, Pteris longifolia; 3, Asplenium bulbiferum; 4, Adiantum hispidulum.—*A. R.* Dendrobium Hildebrandii, allied to Dendrobium tortile. The pubescent labellum is a very reliable character.—*H. T.* Pulmonaria officinalis.—*W. F.* The male form of the Goat Willow (Salix Caprea).

NAMES OF FRUITS: *A. J. G.* Annie Elizabeth Apple.

NITRATE OF LIME: *Foreman Mont.* Nitrate of lime is a valuable manure obtained from the free nitrogen of the air by passing the latter through an intensely heated electric furnace. Nitrogenous fumes are formed, and these are absorbed by water and combined with lime. It is a very soluble material, and is best applied to crops in the spring after the manner of nitrate of soda, and in about the same quantity as that manure, namely, ½ oz. to each square yard, or 1½ cwt. per acre.

ONION FOLIAGE DECAYING PREMATURELY: *Enquirer.* We suspect that your Onion crops, which failed during the past few years, "the tops turning yellow at midsummer," were affected with the grub of the Onion Fly. The female insect lays her eggs on the leaves of the young plants in the spring, and the maggots work downwards until they reach the base of the bulbs, where they remain and feed. After a comparatively brief period the grubs pass into the pupal stage, and then are transformed into fully-developed flies, which in turn lay eggs and produce another generation. This goes on until the autumn; the last developed generation of pupæ remain in the soil until spring, when they emerge in the form of the fully-developed Fly to continue the life cycle. Once the grubs have worked their way to the bases of the Onions it is exceedingly difficult to remove them. You should endeavour to prevent attacks by practising strict rotation, and by treating the ground where last year's crop was grown with gas-lime, spreading it evenly at the rate of ¼ cwt. to the square rod. This must be allowed to lie on the surface of the ground for at least a fortnight before being forked into the top spit, and several weeks should elapse before the ground is planted or sown with seeds, as the sulphur compounds in the fresh gas-lime are injurious to all life. As soon as this year's Onion seedlings are 3 or 4 inches high you should employ some means of preventing the fly's laying her eggs, as by dusting the foliage whilst it is damp with soot or hellebore powder. Spraying with a distasteful liquid is not practicable, because the foliage is so smooth that water immediately runs off the leaves. After thinning the seedlings, the soil between the rows should be hoed or raked, so that the holes made by withdrawing the superfluous plants will be filled at once. As the ravages of this Fly seem to be greatest during the early stages of the plant, every endeavour should be made to induce a quick growth. Some gardeners sow seeds in boxes placed in heat early in February, and transplant the seedlings into the beds in April. By this method damage by the Onion Fly is greatly mitigated or prevented.

ORCHID BASKETS: *W. C.* These may be obtained from the horticultural sundriesmen.

PINK FLOWERS AS CUT BLOOMS: *M. C. B.* There is a wide choice of pink flowers suitable for furnishing cut blooms during most seasons of the year. The choice of subject will depend on the accommodation you possess for cultivating, also whether you desire to grow the plants indoors all the year round, or if you intend to rely on outside flowers for the summer. With suitable accommodation you should commence cutting pink Chrysanthemums in August, and continue with suitable varieties for a succession until the first week in March, selecting the following varieties:—Hypathia (single), Kitty Riches (single), James Bateman, Normandie, Hector, La Somme, Marie Masse, Provence, Cranford Pink, and Betty Spark. These will furnish you with good flowers out-of-doors till the first or second week in October, to be followed by the following varieties indoors:—Mr. McNeice, Pink Quintus, Hilda Laurence (single), Miss May Thorne (single), Mr. W. Higgs (single), Thomas Page, Rayonante, Ethel Thorpe, W. Duckham, Edith Pagram (single), Madame Chavat, A. J. Balfour, Wells' Late Pink, and Winter Cheer. With a suitable house tree Carnations may be had practically all the year round, and these flowers should certainly provide your second selection from October to May. Enchantress, May Day, Mr. H. Burnett, Lucy, Lady Meyer, Pink Delight, Lady Northcliffe, and Marmion should afford sufficient variety. During the winter Primula stellata, P. obconica, and Begonia Gloire de Lorraine may be useful for producing flowers suitable for furnishing cut blooms for small vases. From the middle of January until May, Tulips in variety are extremely useful, and the plants do not take up a great deal of room. Rose Gris de Lin, Proserpine, Pink Beauty, Salvata Rosa, Clara Butt (Darwin), Antony Roozen (Darwin), Queen of Roses (Darwin), Inglescombe Pink (May-flowering), Picotee (May-flowering), Gustave Doré (Darwin), and Margaret (Darwin). Roses also may be had indoors from the middle of March and from the end of May out-of-doors. Pink Roses are so numerous that it will serve no useful purpose to enumerate them. Other pink flowers that may be had in bloom from April onwards indoors are Zonal and Ivy-leaved Pelargoniums, Schizanthus, Godetias, and Clarkias (the annuals are especially useful and easily grown); Azalea indica, Dielytra spectabilis, Regal and Fancy Pelargoniums (from May to August), Stock Beauty of Nice, which may be had during most of the winter and spring months; Ten-Week Stocks, which bloom from May for a month or two in pots, and afterwards out-of-doors till August, and Spiræas Pink Blossom and Queen Alexandra; these are available from April till August. Amongst annuals and biennials which bloom out-of-doors may be instanced Antirrhinums, Penstemons, Canterbury Bells, Larkspurs, Asters, Carnations, Malope, Sweet Peas, Candytuft, Cornflowers, Lupins, Phlox, Clarkias, and Sweet Williams. Of herbaceous plants there is infinite variety, and a selection could be made from any catalogue, whilst various forms of Gladioli might also be had in bloom from May, in pots, until October out-of-doors.

POND WEED: *E. S. P. M.* The American waterweed, Elodeæ canadensis, may be destroyed by the sulphate of copper treatment you mention. It is advisable to remove the dead mass of weed, otherwise its decomposition may prove a source of danger.

POTATOS: *A. H.* There is no disease present on your potatos. The tubers have been damaged by frost, and the injured sprouts in the eyes have become mouldy.

PRIMULA OBCONICA UNHEALTHY: *Perplexed.* The leaves are injured by a mining maggot. Fumigation will prevent the insects from laying their eggs on the leaves.

SILVER-LEAF DISEASE: *C. R., Constant Reader, and J. C.* Recent investigations have shown that this disease is caused by the fungus Stereum purpureum, but up to the present no certain method of combating the disease has been discovered. Stereum purpureum is a wound parasite gaining access to the plant through an injury to the superficial tissues. It has also been found that soft wooded trees are more liable to injury than those with hard wood. It has been claimed by New Zealand growers that sulphate of iron will check the disease. The spores of the fungus are developed on dead branches, therefore a vigilant watch should be kept on diseased trees, and their dead branches should be removed and burned without delay. You will find an account of the investigations on Silver leaf, carried out by Mr. Spencer Pickering, in *Gardeners' Chronicle*, November 12, 1910, p. 356.

STOVE PLANTS FROM SEEDS: *W. Button.* There are numerous tropical plants which are readily raised from seeds and are also of comparatively easy culture. Many of the very finest stove plants, however, do not readily form seeds under cultivation, but those in the following list, under their respective headings may be grown from seeds which may be obtained from the seedsmen:—(1) (Stove climbers): Gloriosa Rothschildiana, Schubertia grandiflora, Stephanotis floribunda, Solanum Seaforthianum, Ipomæa Learii, and Passiflora (of sorts). (2) (Stove foliage plants): Caladiums, Begonia Rex (in variety), Palms, such as Cocos Weddelliana, or Phœnix Roebelinii, Bertolonia hybrida, Coleus (numerous garden varieties), and Cyrtanthera magnifica. (3) (Stove flowering plants): Gloxinias, Streptocarpus, Amaryllis, Begonias (both species and hybrids), Exacum macranthum, and Clerodendron fallax.

STRAWBERRY LEAVES DISEASED: *O. W.* The leaves are infested with the fungus Sphaerella fragariæ. Spray the plants with the Bordeaux mixture at half the normal strength, repeating the operation several times before the flowers are fully open. In the case of plants out of doors cut off the leaves with a scythe next autumn and spread a little fresh straw over the beds, afterwards setting fire to this when the mown leaves are in a dry condition. This will destroy all fungous and insect pests.

STRAWBERRIES DEFORMED: *Old Subscriber.* The flowers have not been perfectly pollinated, and the berries have, in consequence grown deformed.

SWEET PEA NOVELTIES: *L. N.* It is a difficult matter to name the best three novelties in Sweet Peas. We may select Lavender George Herbert (lavender); A. A. Fabius (bright rose); and Mark's Tey (rosy maroon and purple) as three of the best new sorts for exhibition. If the colour of the last-named is not suitable, then Agricola, white, tinted lilac, may be substituted. For decoration purposes, Kathleen, Zarina Spencer, and Anglian Fairy are to be recommended. The three best novelties of 1911-1912 were undoubtedly Edith Taylor, Mrs. Cuthbertson, and R. F. Felton.

THE MUMMY PEA: *E. N.* The Crown or Mummy Pea occurs in two forms—a white and a purple-flowered race. The peculiarity of the race consists in the fasciation of the stem near the top, and in bearing on the fattened and thickened upper part of the stem a close bunch of many flowers. The legend that the Mummy Pea was derived from seed found in a mummy case and brought to England is as old as it is absurd, and was, as it would seem, first promulgated by a Mr. Grimston. As is stated in an article in these pages (*Gardeners' Chronicle*, p. 45, 1873), "it is really most amusing to find with what circumstantiality this tale is repeated—how the retailer knows somebody who knows somebody else who knew the party who actually picked the Pea out of the mummy." It is as certain as things in this uncertain world can be, that no Pea or other seed ever taken from a mummy case proved capable of growth unless it had been put there after the case was opened. Certain seeds possess the power of retaining their vitality for a considerable number of years. Thus in experiments made with seeds stored in a museum, some known to be over 80 years old were found to germinate. It is a far cry, however, from 80 years to many centuries, and the legend of the viability of Peas from mummy cases must be put in the same category with that of toads hopping out of quarried stone, wherein we are asked to believe they had remained potentially lively for hundreds of centuries.

TULIPS FOR EXAMINATION: *A. E. D.* The bulbs were imperfectly ripened.

Communications Received.—O. A. C.—C. E. G.—H. B. H.—A. W. S.—J. G. T.—A. H.—R. T.—W. Parker—H. S.—W. J. D.—H. W.—W. T.—Vine—J. O. S.—H. C.—W. R.—S. and M., Ltd.—C. P. R.—C. G., Gloucester—A. C. B.—A. T. H.—H. F. M.—R. I. L.—H. W. W.—F. D.—W. K., Graz—W. I.—J. P., Sweden—S. C.—Anxious, Yorks—A. G.—W. B.

THE
Gardeners' Chronicle

No. 1,369.—SATURDAY, March 22, 1913.

CONTENTS.

American nursery, an...	179	Prunus cerasifera atro-purpurea Moseri ...	190
Androsace	188	Puya chilensis	189
Bangor's Park, Iver ...	180	Rockery, the construction of an ideal ...	178
Books, notices of—		Rosary, the—	
Coniferous Seeds and Seedlings	187	Yellow garden Roses	181
Plant Diseases ...	186	Seedlings, coniferous, damping off of ...	186
The Intensive Culture of Vegetables on the French System	179	Seed testing	187
Chlorosis in plants ...	188	Senecio Ghiesbreghtii	188
Cyclamens, remarkable	187	Small Holdings and Allotments	188
Cyclamen, culture of ..	189	Societies—	
Diploma in horticulture, national ...	190	Finchley Chrysanthemum	194
Edinburgh gardeners to combine	188	Manchester & North of England Orchid	193
Eustoma Russellianum and Chlora grandiflora	188	North of England Horticultural ...	194
Flora of the Malayan Peninsula	187	Royal Horticultural	191
Florists' flowers—		Royal Meteorological	193
Antirrhinums... ...	191	Scottish Fruit Trade	194
Forestry school at Cambridge University ...	178	Société Française d'horticulture de Londres	188
Fruit blossoms, hardy, experiments in the pollination of... ...	190	United Horticultural Benefit & Provident	194
Gooseberry bushes, tipping	187	South African Combretaceæ, the	181
Grapes, Belgian ...	188	Sulphur as a manure ...	188
Heredity and mutation	189	Voles and Holly trees...	190
Horticulture, what is...	186	Watson, Mr. J. Gilbert, appointment of ...	187
Iris garden in winter, an	177	Week's work, the—	
L.C.C. Parks Committee	188	Flower garden, the ...	184
Mazus rugosus	190	Fruits under glass ...	185
Obituary—		Hardy fruit garden, the	185
Bennett, William ...	195	Kitchen garden, the	185
Clark, George ...	195	Orchid houses, the ...	184
Williams, Charles ...	195	Plants under glass ...	184
Peach trees, the training of	189	Williams, Mr. G. E., appointment of ...	187
Phylloxera	190		

ILLUSTRATIONS.

Androsace glacialis 187
Androsace primuloides.. 187
Prunus cerasifera atropurpurea Moseri 190
Riverview Nurseries, Riverton, U.S.A., views of the glasshouses at ... ... 180, 181, and 182
Rockery, details in the construction of a... 178

AN IRIS GARDEN IN WINTER.

THERE is not much that can be said in praise of the winter climate in Southern England, and yet the fact that it is usually cold and mild by turns seems to induce plants from climates both colder and warmer than our own to behave as they would in their homes. If we had long periods of continuous frost in winter we should certainly be unable to grow many Irises from the warmer regions, as, for instance, the Californian species, which Dr. Britton tells me he is unable to grow in New York; while, if frost were almost unknown, the species from the colder regions would be unable to rest in winter and would exhaust their energies in constant leaf-growth. This happens in the Azores, where many Irises remain flowerless even if they manage to exist.

Observation of the behaviour of plants of many species of Iris seems to show that the climate-character—if such an expression may be coined—of each species remains constant here. It shows, further, that there are certain laws governing their behaviour which may be used to determine to a certain extent the habitats of plants of unknown origin. These laws cannot, of course, give us positive proof that the plant in question comes from a particular country, but they do seem to enable us to eliminate the countries from which it cannot come.

There appear to be four main types of climate-character among Irises — the alpine, the mild winter, the hard winter and the Central Asiatic.

The alpine class includes those Irises whose flowers develop as soon as, or almost as soon as, the leaves, and whose leaf-growth is of comparatively short duration. This class is confined to the bulbous species of the Reticulata and Juno groups, and it is interesting to notice that of both these groups odd species seem to have strayed away from the natural habitat, and to have become weak and effeminate under the influence of the enervating climate of the lower levels. Thus I. reticulata itself from the Caucasus is perfectly hardy here, and so is I. histrioides from the mountains near Amasia. Both of these increase rapidly by seeds and offsets in suitable soil, provided always that they escape fungoid attacks. I. histrio, however, from Southern Asia Minor and I. Vartanii, which may be looked upon as the southernmost form of histrio, coming as it does from the neighbourhood of Nazareth and Jerusalem, are much less hardy, and tend to lose their alpine character by developing their leaves before the flowers appear. Of the Juno group, the effeminate stragglers are I. sindjarensis and some of the small persica forms, such as I. issica. Sindjarensis comes from low hills in Mesopotamia, and shows its debility in that after flowering the plant has seldom sufficient strength to form a bulb of flowering size for the following year. It splits up into several small bulbs, which take several years to reach flowering size. I. bucharica, on the contrary, is a hardy mountaineer from Bokhara, and each flowering bulb leaves two or three full-grown descendants to replace it the next year.

A noticeable feature of these alpine species of Iris is that the flowers are able to resist hard frost. Fragile as they may appear, the flowers of the galatica form of I. persica and of the white form of I. orchioides have recently passed unharmed through several very sharp frosts. This resistance to cold is doubtless a character acquired in their alpine homes, where night frosts must be common at flowering time.

Those species of Iris which show either the mild or the cold winter character are by far the most numerous. Species from regions which have a mild, moist winter begin to grow in autumn and have foliage of some length in winter, while those from more rigorous climates lose their leaves entirely in autumn and lie dormant until the spring. Some of the latter by developing their flowers rapidly—e.g., I. pumila—would seem to approach the alpine section, but they differ in that their foliage develops slowly throughout the whole summer. I. pumila is, in fact, a characteristic cold winter Iris, and may be contrasted with I. chamæiris, which has leaves of some length in winter, and of which imported plants are often killed here by sharp frosts, though seedlings tend to become acclimatised and to gain in hardiness.

Other similar pairs of species are I. aphylla, from Bohemia and Hungary, which is leafless in winter and quite hardy, and I. subbiflora, from the Portuguese coast and Southern Spain, which is evergreen and tender; I. variegata, from Hungary and the Balkans, and I. germanica, of whose habitat it can only be said that it cannot be Germany, because the foliage grows in the autumn, and because the flowers are only too liable to be nipped in the bud in March or early April. I. germanica is probably a native of the Mediterranean coast which has gradually spread by human agency. If we accept the theory which is here put forward, we shall not hesitate to say that the forms of I. germanica, which are now common in Srinagur and in Khatmandu, must have been introduced from the West, for their climate-characters are those of mild winter Irises, and entirely unlike those of the undoubted Himalayan species, which behave like those of the Central Asiatic section.

Among the Apogon Irises there are many examples both of the mild and cold winter characters. Thus I. longipetala, I. Douglasiana, I. Purdyi and other species from the Californian coastal region are evergreen here, while I. missouriensis, from the mountainous region in which the Missouri rises, is practically only a form of I. longipetala, which behaves as a cold winter plant. The flowers of the two species are almost indistinguishable.

The difficult question of the various forms of I. spuria and I. halophila has some light thrown upon it when we examine the plants in winter. From Hyères, from Vendée, and from Hérault come slightly varying forms of I. spuria, but all agree in having leaves of some length in winter, as have also the ochroleuca group from Western Asia Minor. I. halophila, however, from Central Asia, loses its leaves entirely, and in winter only shows a few short sturdy leaf tips, which look capable of standing any degree of cold. In view of this fact, I am inclined to believe that plants that are now common in Kashmir, I. aurea and a beautiful blue form of I. spuria, closely resembling, if not identical with, Foster's Monspur forms, are really introductions from Western Asia and not indigenous to their present habitats. All the Sibirica group are cold winter Irises, but it is instructive to notice the different behaviour in winter of I. fulva and I. hexagona, from the swampy ground near New Orleans, and of I. foliosa (La Mance's form of I. hexagona), from the Osark Mountains in Arkansas. The latter reserves its energies for the spring and summer, and then flowers readily, while the two former battle with our winters, often get the worst of the contest, and remain flowerless in summer.

Typical Central Asiatic Irises are not

common in our gardens. I. halophila, which has been contrasted already with I. spuria, is an approach to the type, but the flowers develop at a much later stage of the growth of the plant than do those of characteristic examples. In such species, however, as I. kumaonensis, I. Hookeriana, I. nepalensis, growth commences about the time when in their homes the plants would begin to feel the influence of the warm and moist south-west Monsoon. The flowers develop rapidly and are over before the leaves have attained to any considerable size. I. ensata ought to behave in a similar way, but for some reason or other it usually wakes up too early in the year in our mild winters. In its native home in Central Asia the flowers appear while the leaves are still quite short, as many herbarium specimens prove, but here a spell of mild weather in January or February induces it to send up growths which are checked or even destroyed by late frost. Flowers are therefore seldom numerous here except in sheltered positions, but in Asia, when once the change from winter comes, frost is probably unknown, and the flowers are accordingly numerous.

As might be expected, the alpine and the cold winter Irises are those which do best with us. The mild winter species will always be disappointing, and our loss must be great, for these latter include all the larger Oncocyclus Irises, and also some of the finest Pogonirises, such as I. cypriana and I. mesopotamica. Of these latter some magnificent hybrids have been raised by using the pollen of the best of the so-called German Irises. They were produced in the South of France, and are extremely large and handsome, but, unfortunately, experience of their behaviour here during the last two or three years seems to show that they have the inherent weakness, in our climate, of typical mild winter Irises. *W. R. Dykes, Charterhouse, Godalming.*

THE IDEAL ROCKERY: ITS CONSTRUCTION.

III.—PLANNING A ROCKERY OF SMALL OR MEDIUM SIZE ON PAPER.

I HAVE often been asked whether, in building a rockery of any size, it is or is not advisable to sketch out a rough plan, or whether it is better to wait until the actual stone-laying begins, and "let the stones themselves suggest the way they should be laid—according to their best faces." To this question I would answer—a plan is essential, and a rough one need take no longer than ten minutes to prepare.

With this note I give an example of a sketch for a rockery on an irregular piece of ground.

It is a small plan, and given merely as an indication of what is meant. But it will be seen that such a plan is of great use for reference. It keeps continually before the builders what is required at times when perhaps, in the first stages of the work and in a temporary absence of the foreman, irresponsible workmen might be in danger of misplacing a heap of soil.

To leave the stones themselves to suggest the way they should be laid is likely to lead to a bad result. Suppose a stone is selected solely on account of its shape, the result may be that if we place this stone with its most beautiful face to the view we shall have it presenting its higher end to the lower part of the rockery; in other words, sloping the wrong way. This cannot be permitted, and, unless perchance it happens that the high end can be buried so as to lose none of the effect, we must turn the stone round and expose the plainer face. I merely cite this as one of the cases in which the builder is not permitted by the general scheme to use every stone as he would wish. There are other important considerations in the placing of stones besides the one of direction of slope.

Perhaps the strongest recommendation for a sketch plan in the case of the small rockery (in the case of large rock-gardens a design is essential) is the fact that the designer can adjudge and estimate the proportion easier on a slip of paper than on the ground itself, and proportion is the first point demanding attention at this stage of the work.

The plan, drawn in ink, should show the boundary lines of the proposed rockery of exact shape, and to scale at least half inch to one yard. If a stream be included, only its source and outlet need be indicated on the rough plan. If it is intended to have a defined path on the ground-level its course should be traced, keeping the sides anything but parallel, and separating to enclose a wide space somewhere in the heart of the rockery. The course of the stream may then be outlined, at least one curve being included.

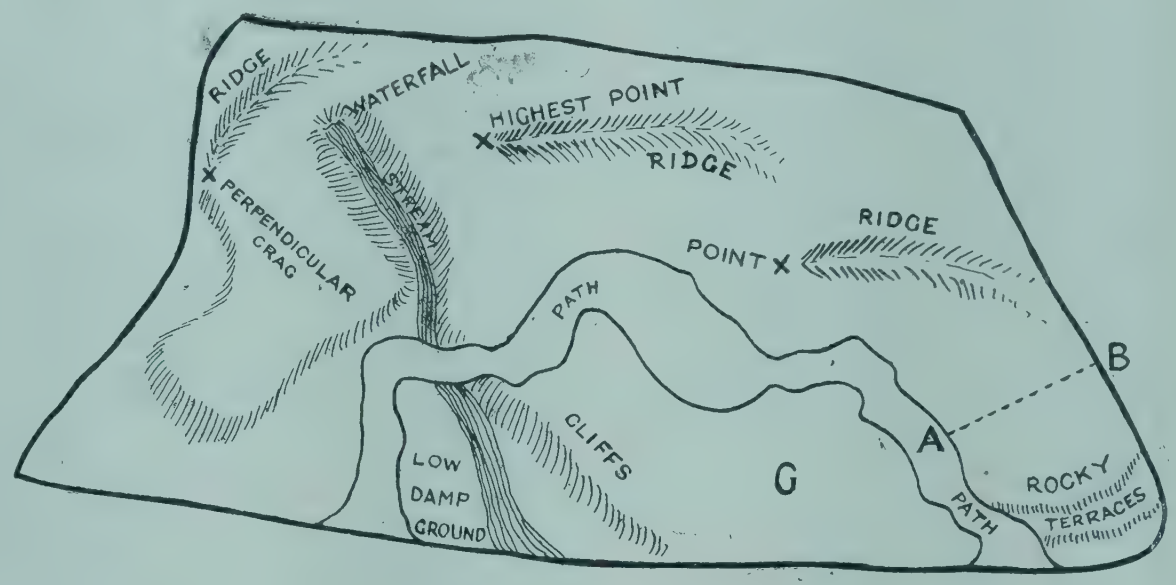


FIG. 78. PLAN OF ROCKERY FOR AN IRREGULAR PIECE OF GROUND.

Before proceeding further it should first be ascertained that all the narrower widths of stonework suggested on the plan are practicable. For instance, if the line from A to B be found so narrow that for the height of the ridge the builder will be compelled to make its sides very steep and ugly, the plan must be altered somehow in that direction—widen A to B, or lessen the height.

The stream on the plan is crossed by the path, either by a bridge consisting of one or two large stones, or by stepping stones. To help in comprehending the plan around the stream, crags and cliffs of stone may be suggested by vertical lines as shown, and most useful is the suggestion of the topmost ridges and their culminating points or crags by means of the centipede-like marks shown.

The low, damp ground at the lower end of the stream is level with, or even a little below, the path running alongside it, and access to the higher ground G is attained by means of the cliffs. It will be gathered that in this particular plan the rockery is made to rise slightly from right to left, most of the more precipitous stonework being on the left.

It is advisable in drawing out these rough working plans to sketch in the outline of the available space heavily or in ink, keeping the interior details lighter and in pencil, that they may be easily altered where required. *J. Wood, Boston Spa.*

SCHOOL OF FORESTRY AT CAMBRIDGE UNIVERSITY.

THE best and most lasting tribute to Mr. Henry's work in connection with the School of Forestry at Cambridge lies in the fact that, although it was only established seven years ago, it is already a flourishing institution and of acknowledged efficiency. As the following brief account of the curriculum illustrates, this success is due primarily to the prominent place which practical forestry takes in the course of studies.

Instruction in Forestry was instituted in the University of Cambridge in 1907, when a Forestry Committee of the Board of Agricultural Studies was formed, and Mr. Augustine Henry was appointed Reader in Forestry.

The course of study for the Diploma in Forestry may be summarised as follows:—Candidates for admission to the examination for the diploma must have (1) obtained the degree of B.A., (2) passed qualifying examinations in Botany, Geology, Physics, and Chemistry; and (3) attended for two years courses of instruction in Forestry and cognate subjects.

The course for the first year includes lectures and practical work in Forest Botany, Silviculture and General Forestry. During the long vacation the student spends ten weeks on a British woodland estate in practical work under the superintendence of an experienced forester.

The course for the second year includes similar instruction in forest management and forest utilisation, and in diseases of Trees and Timber, Timber, Forest Zoology, surveying and engineering. During the long vacation of this year the student has ten weeks' practical work in a Continental forest under the superintendence of a State forester.

The total fees for instruction in Forestry for the diploma course at the University amount to £9 19s. 6d. The fee for admission to the examination for the diploma is £2 2s. The student in addition incurs the expenses, which are variable, of instruction during the two long vacations in British and Continental forests.

An elementary course in forestry has been established for agricultural students, who are now encouraged to take forestry as an optional subject in the examination for the diploma in Agriculture and for the B.A. degree in Agricultural Science. This elementary course is identical with the first year's course for the diploma in Forestry.

The woods used for the purpose of demonstration are all privately owned, and lie in the neighbourhood of Cambridge and in the adjoining counties. Visits are made to private woods and plantations, including the Botanic Gardens at Cambridge, weekly during term time, and

afford an opportunity of seeing every type of woodland in the Eastern Counties of England, and of study of many forestry operations.

There is no land at present under the control of the Forestry Department, but certain experiments have been carried out by the Reader and by the Lecturer on Timber, with the assistance of private owners interested in Forestry.

A large collection of specimens, about 1,900 in number illustrative of Timbers, Forest Botany (exclusive of Herbarium specimens), and diseases of Trees, has been made. The timbers include not only home-grown species, but also examples of most of the important trees of India, China, Japan, and North America. The timber collection is unrivalled for its variety and illustrates many problems of Silviculture.

A forestry building, which will comprise laboratories, workshop, lecture rooms, and museum, will be erected during the present year at a cost of about £5,000. Funds for building and equipment amounting to over £4,500 have been provided by private benefactors. In addition, the Development Commissioners have sanctioned a grant of £2,500 towards the building, so that the Forestry Committee has now at its disposal about £7,000 for building, equipment and maintenance.

The Board of Agriculture and Fisheries having provided from the Development Fund £500 a year for two years for Research Work on Timber, the Forestry Committee have appointed Mr. E. R. Burdon, M.A., Investigator in Timber for two years from January 1, 1913, and Mr. A. P. Long, B.A., Assistant Investigator for the same period.

The Development Commissioners have also sanctioned a grant of £500 a year for three years for Advisory Work in twelve counties in the East of England, comprising Middlesex, Hertfordshire, Essex, Northamptonshire, Bedfordshire, Huntingdonshire, Northamptonshire, Rutlandshire, Cambridgeshire, Suffolk, Norfolk, and Lincolnshire. An Adviser in Forestry, Mr. C. Hankins, has been appointed by the Forestry Committee for a period of three years, from April 1 next.

The training of Probationers for the Indian Forest Service began at Cambridge in October, 1911. The Forestry Committee, in consultation with the Director of Indian Forest Studies, issued in January, 1912, special regulations for the additional course of study for Indian Forest Probationers, which is required by the Secretary of State for India in Council. In connection with the training of the Indian Forest Probationers, Mr. H. Jackson, Conservator of Forests, India, gives courses of lectures in Indian Forestry and Forest Law.

The Forestry Department is supported in part by annual subscriptions from the County Councils of Northamptonshire, Norfolk, Cambridgeshire, West Suffolk, and Huntingdonshire; by a Government Grant from the Board of Agriculture and Fisheries; and during the past year ten of the Cambridge Colleges, Clare, Pembroke, Gonville and Caius, Trinity Hall, King's, Queens', Christ's, St. John's, Trinity, and Emmanuel, have also contributed.

NOTICES OF BOOKS.

Intensive Culture of Vegetables.*

It is now conceded, although somewhat grudgingly perhaps by some, that the French system of intensive cultivation has secured a firm footing for itself in British horticulture. Although much has already been said and written on the subject, there is still apparently room for more literature upon it. Hence the appearance of a handsome volume of nearly 200 pages on the intensive culture of vegetables, written by Mr. Paul Aquatias, and published by Mr. Upcott Gill. The author, who has had considerable experience in the intensive culture of vegetables and salads in England, deals with the subject thoroughly and practically. He points out that the system was practised over 350 years ago, when it was referred to by Olivier de Serres. Later on la Quintinye, head gardener to Louis XIV., succeeded in providing vegetable delicacies for his Royal master throughout the year by intensive methods. Since that time the market gardeners or *maraîchers* in the neighbourhood of Paris have been renowned for the marvellous quantities of Lettuces, Endives, Radishes, Turnips, Carrots, and Cauliflowers they have produced on areas conspicuously small compared with the acreage required by British market gardeners.

Mr. Aquatias rightly points out that the principles underlying "intensive" cultivation consist in having hotbeds—whether under lights or cloches, or unprotected in any way—all of uniform width at all times of the year, so that the frames or cloches are interchangeable whenever necessary. The method of cropping is also carried out on a settled and uniform plan, the main object in view being to secure the largest possible quantities of produce rapidly and in a methodical manner, and with the least possible waste of time, labour and money.

Another characteristic of the French system is to keep the plants steadily growing from the moment the seeds germinate until the plants are ready for sale. Every precaution is taken to prevent anything in the nature of a check to growth. Seeds are never sown before their proper time, and the expert grower knows almost to the day when he may commence to harvest any particular crop.

During the winter months—from October to the end of March—the intensive system is put to a severe test. The days are short, sunlight is scarce, and the temperature is often so low that it would be quite impossible for tender vegetables to exist without the aid of the moist and genial warmth they derive from the hotbeds.

The author points out that one of the chief characteristics of the system is the ingenious method of intercropping; indeed, without this, intensive cultivation would have no meaning, and the crops would be three or four times less than they actually are. To intercrop properly it is essential first of all to sow or plant a catch crop that will mature quickly and may be cleared off the ground before it has a chance of interfering with the maincrop. Thus Radishes or Lettuces, or both, may be treated as catch or intercrops upon a bed intended to produce a maincrop of Carrots. Sometimes a catch crop of Endive is planted three weeks before the maincrop of Cauliflowers, while at another time a maincrop is grown until almost mature before it is intercropped with plants of a different nature.

The author is of opinion that an area of two acres is quite sufficient for all practical purposes, and explains how this area may be laid out. "A quarter of this space is covered with glass at one season; another quarter is in readiness to receive the material when the season's work is done, to start another; while the other half is left to outdoor crops." For this purpose the author considers that the work could be carried out with 300 lights and 2,000 cloches, and that the total capital expenditure would be £680 10s., including £150 as the purchase price of two acres of land. The annual expenses are estimated at £397 10s., but the author is silent as to what the returns are likely to be, and purposely so, as he says, "these would have been misleading." Still, it would have been interesting to know what Mr. Aquatias has been accustomed to receive for the produce he has grown so largely during the past few years. Although the prices could hardly be taken as a guarantee for the future, they would certainly have been useful as an indication of what had actually been accomplished, and how far the receipts went to defray the expenses of the garden.

In a work of this description the various cultural operations are, of course, dealt with at length, from the marking out of the ground for the beds to their sowing and planting and general care, and the practical grower will find the information given of great use. In a "French" garden, tools of French pattern are used in England probably more out of sentiment than anything else, but however much one might like to use British implements, there is one peculiarly French appliance that cannot possibly be done without, and that is the *hotte*—a curious wicker basket used for carrying manure on the back between the rows of hotbeds, which, as a rule, are only separated from each other by pathways less than a foot wide.

Whether the author was well advised to give his information chiefly in the form of a monthly calendar may be a matter of opinion. A calendar is of great use to the man who already knows how to cultivate his crops, and only needs a reminder now and again as to when certain operations should be performed. But to one not so well versed in cultural details the calendar system may prove somewhat irritating and irksome. For instance, if one wishes to know all about the cultivation of Cauliflowers, the information must be gleaned from eleven different and widely separated pages; and the same with other crops. To minimise this little drawback—if drawback it be—it would have been an improvement to have had the name of the month printed at the top of the right-hand pages, to save one the trouble of turning back to find out what particular month was being dealt with. There is, however, no difficulty or ambiguity as to which crops are under discussion, for their names are boldly printed at the head of each paragraph.

Three important crops—namely, Cucumbers, Melons, and Mushrooms—are considered in special articles, and it is easy to grasp the details of their culture from start to finish. The language is on the whole perfectly clear, but there are a few not unnatural peculiarities of expression, such as the "pruning" of Cucumbers and Melons, and "spraying" with flowers of sulphur.

The work concludes with interesting chapters on Seed saving and Vegetable and "animal" pests. There are twenty-eight line drawings and cuts to illustrate the text, and six half-tone plates add an air of elegance to the volume. Those representing the culture of Mushrooms in the underground quarries of Paris will be of more than passing interest to "champignonists" on this side of the Channel. *John Weathers.*

* *The Intensive Culture of Vegetables on the French System.* By P. Aquatias. (London: L. Upcott Gill. 1913.) Price 3s. 6d. net.

AN AMERICAN NURSERY.

Although private gardening is not carried on to nearly the same extent in America as in this country, commercial horticulture in the United States and Canada is of great importance, and many of the nurseries there are of very large extent. A great demand exists for cut blooms and decorative plants. Roses are grown for market in enormous quantities, also Carnations, Anemones, and other popular flowers. There is also a large trade in Palms, Ferns, Dracænas, and other decorative foliage plants. The firm of Messrs. Henry A. Dreer, of Philadelphia, in the State of Pennsylvania, possesses one of the largest nurseries in the States, known as the Riverton Nurseries. Recently 125 acres of ground were added to this establishment, and in this new portion, which is known as the Riverview Nursery, the block of glasshouses shown in Fig. 79 has been erected. Each house is more than 200 feet long. A corridor running through the middle of the range connects the various houses one with another, so that plants may be readily moved from one department to another without exposing them to the weather. In the centre of the glasshouses is a service

building or workroom having an area of 203 feet by 34 feet. One-half the houses are furnished with stages, known in America as tables, on which are grown Areca lutescens, Phœnix Roebelinii (see fig. 82), Nephrolepis, Codiæums (Crotons), Dracænas (fig. 83), variegated Pineapples (fig. 84), and other plants. There are no stages in the rest of the houses, which are devoted entirely to the cultivation of Kentia Palms in all sizes. All the valves controlling the heating of the various divisions are in the corridor, also the means for opening and closing the ventilators, and this greatly facilitates the regulation of temperature. This very large range of glasshouses, with its complement of heating appliances, etc., was erected in less than six months. Amongst the specialities of the firm are Cannas and Dahlias, and much of the ground around the glasshouses is planted with these subjects. Each season 250,000 plants each of Cannas and Dahlias are grown at "Riverview." Other plants that are largely cultivated in this nursery include Strawberries (for runners in pots); and Hydrangeas. In frames are large batches of Anemone japonica, Senecio (syn. Farfugium) grande, and Ardisia crenulata. But besides these the firm has a large trade in hardy flowering plants, Roses, Ferns, and a general variety of nursery stock.

Pearl Rhododendron, planted in the ordinary soil—a loam, about 18 inches in depth, and resting on a gravelly subsoil—were in fine condition and augur well for a good crop. Close by are a like number of similar beds planted with hardy heaths (Erica mediterranea), which add variety to the quiet sylvan and floral picture. Near this part of the grounds a slightly raised herbaceous bed running in an easterly direction forms a floral boundary between the pleasure grounds and the closely-mown lawn. A short way from the croquet lawn, almost under the shade of a handsome specimen of the Purple Oak, is a very inviting summer-house, in the neighbourhood of a healthy specimen of Araucaria imbricata.

Growing in a border close to the south entrance of the mansion are large, grandly-flowered plants of Hydrangea hortensis. Yucca filamentosa and Y. recurva growing in the same border flowered well last season. A border at the foot of the balustrade on the left of the walk leading from the house to Lady Hilda Mosley's studio is rendered attractive by a floral display made by a well-selected strain of dwarf-growing Antirrhinums, backed by well-flowered plants of the



Fig. 79.—PARTIAL VIEW OF THE NEW RANGE OF GLASSHOUSES, AT RIVERVIEW NURSERIES, RIVERTON, U.S.A.

BANGORS PARK, IVER.

Situated amid pleasant surroundings, one mile north of Iver, and 2½ miles north-east of Uxbridge, is Bangors Park, the delightful Buckinghamshire residence of Tonman Mosley, Esq., and Lady Hilda Mosley. On the walls of the south front of the house are Ampelopsis Veitchii, Wistaria sinensis, Ceanothus azureus grandiflora, and Lonicera sempervirens. The green sward of velvety lawn extends in a southerly direction from the south front of the house to the confines of the park and the pleasure grounds. Well-kept, winding gravel walks lead to many interesting and beautiful spots in the grounds, in which are luxuriating fine specimens of trees and flowering and evergreen shrubs. Of the trees, mention may be made of the following species and varieties: Cupressus Lawsoniana, Cedrus atlantica (including handsome specimens of C. a. glauca), Sequoia gigantea, Quercus purpurascens, Q. sempervirens (several fine well-proportioned young trees), Ilex albo-marginata and I. aurea marginata, Golden Yew (Taxus aurea), Pinus Strobus, Abies Douglasii, etc. The dark purple foliage of Prunus Pissardii and the brightly-coloured fruit of the Siberian Crab contrast effectively with the subdued tints of surrounding objects.

Following a winding walk on the confines of the grounds and park leading from Kilmore Lodge, the new house in which Mr. F. Noyce, the gardener, lives, there are to be noticed many clumps and specimens of flowering shrubs, such as Cotoneaster Simonsii, Weigela (in variety), and Veronica buxifolia. Oblong beds of Pink old-time Vesuvius Pelargonium, edged with Sutton's dark-foliaged Crimson Bedder Begonia (see p. 180). Close by, a fine-spreading specimen of the Weeping Wych Elm, growing in a recess formed by the balustrading, covers a large area of gravel space. In the shade of the tree is a rustic seat, whereon the visitor may rest and contemplate the composition of the floral picture. Large specimens of white Marguerites, Pelargoniums, and American Aloes (Agave americana) occupy prominent positions on the sides of the principal walks, and add to the general effect.

The Water Rockery.

A short distance from the house a miniature lake has been converted into a "water rockery," for the making of which 100 tons of large, irregular blocks of stone were brought from Derbyshire. The water rockery will be spanned by a bridge, and is destined to add a new feature to what is already an interesting and charming place.

The park covers a large area of excellent land of rather heavy loam, resting on a red gravel sub-soil (which later is used for making new walks, &c.). The ground falls on the north and south to the lake, which is the home of various species of aquatic birds.

The walled-in kitchen garden contained last season excellent crops of Peas, Celery, Leeks, Cauliflower, Broccoli, Brussels Sprouts, Winter Kale, Onions, and other vegetables. Mr. Noyce, like all good practitioners, believes in trenching a portion of the kitchen garden from 2 to 3 feet deep every year and digging in two or three good layers of farmyard manure during the process of trenching.

Pyramids and espalier trees of Apples, Pears, Plums, and Cherries yield satisfactory crops. The same remark applies to the wall trees. Young trees of Peaches, Nectarines, and Apricots showed the training of a master hand.

In the vineries good crops of Black Hamburgh Grapes were observed. Melons and Cucumbers were bearing good crops of handsome fruits. The Melon plants were trained up under the roof-glass on single stems like vines. The varieties grown were Sutton's Emerald Gem and Carter's Earl's Favourite (principally the latter), and the fruits were of fine size and beautifully netted.

Tomatos—Best of All and Carter's Sunrise—planted in narrow boxes stood on the plant stage, were trained up the back wall of a lean-to house, and carried immense crops of large clusters of well-shaped fruits. In order to sustain and swell up such a heavy crop of fruit copious supplies of water (including diluted liquid manure) are applied at the roots daily and sometimes twice a day. The plants cultivated in the stove and greenhouse are of a decorative character. Crotons, Begonias, Calanthes, Caladiums, Ferns, etc.; perpetual-flowering Carnations and Chrysanthemums, Carnations and Violets, etc., occupy the various pits and frames.

The experimental orchard consists of some three or four acres of excellent land, and is reached by following "Her Ladyship's walk" which leads to the kennels of her Japanese spaniels. One portion of this orchard was planted about five years ago with such sterling varieties of Apples as Bramley's Seedling, Warner's King, Bismarck, Golden Spire, Grenadier, Ecklinville Seedling, Cox's Orange Pippin, Cox's Pomona, Worcester Pearmain, Charles Ross, American Mother, Melon Apple, a pale yellow-skinned fruit; all bush trees. Some of the individual fruits of Warner's King and Bramley's Seedling harvested last season turned the scale at from 20-23 ozs. An addition of two acres was made to this experimental orchard last winter. The ground, having been prepared as indicated above, was planted with standard trees of Lane's Prince Albert, Newton Wonder, Bramley's Seedling, Cox's Orange Pippin, etc.; Pears Doyenné du Comice, Pitmaston Duchess, Beurré d'Amanlis and Williams's Bon Chrétien; Plums Green Gage, Monarch, Pond's Seedling, and Victoria. Mr. Tonman Mosley runs this experimental orchard for the benefit of the Bucks County Council Schools, fruits of the various varieties being staged at Aylesbury during the autumn. Such exhibits of approved profitable varieties of the Apple and Pear must prove very interesting and helpful to students of hardy fruit culture.

Additional herbaceous borders and Rose gardens are to be made during the autumn; a new and more extended avenue from the Uxbridge Road to the north entrance to the mansion is being made, and a small villa is in course of erection in the park at the new entrance.

Electric plant is installed at Bangors, and Mr. Noyce's office, fruit-rooms, Mushroom house, potting and tool sheds and stokeholes are all lighted by electricity.

Mr. Tenman Mosley (who is a younger brother of Sir Oswald Mosley, Bart.), is chairman of the North Stafford Railway Company and of the Bucks County Council. *H. W. Ward.*

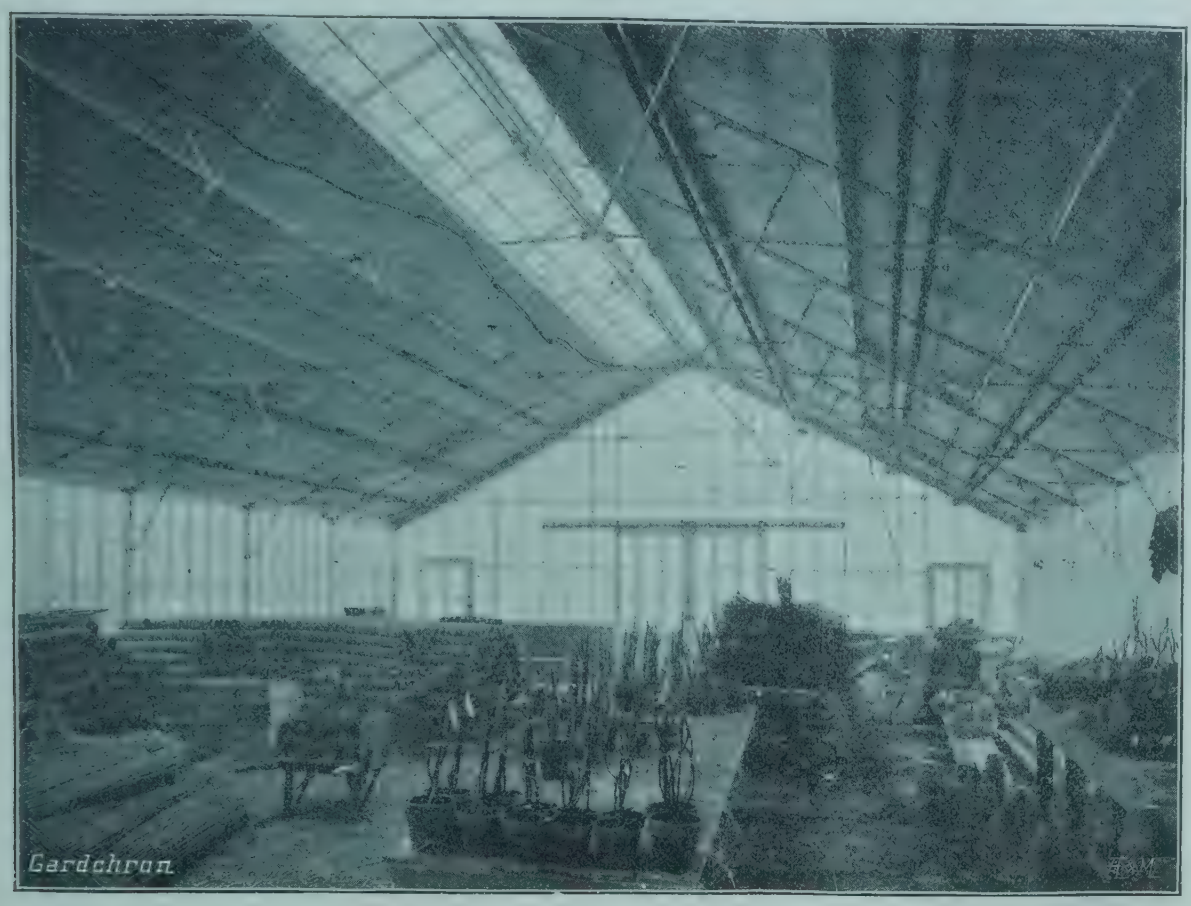


FIG. 80. VIEW IN SERVICE BUILDING AT RIVERVIEW NURSERIES, U.S.A., SHOWING CHARACTER OF CONSTRUCTION. THE BUILDING IS 34 FEET WIDE.

(See page 179.)

THE ROSARY.

YELLOW GARDEN ROSES.

THE number of trustworthy Roses of this special colour, though gradually increasing, is not yet very great. It is unfortunate that Maréchal Niel, though unquestionably Queen of the Conservatory, where this lovely Noisette still seems to reign supreme, is not adapted by its nature—which is somewhat susceptible to atmospheric influences—for open-air cultivation, at least in Scotland. The finest specimen of Maréchal Niel I have ever had the privilege of seeing was grown (in a cool conservatory) at Chapel Rossan, Kirkmaiden, by Mr. David A. McClew, who was for thirty years factor on the Logan Estates. I have tried both Maréchal Niel and Cloth of Gold on a sheltered, but not too sunny, south wall in my garden without success. Now and again I was favoured by the former with a magnificent bloom, but Cloth of Gold never flowered at all. I was much more successful on the same wall with Lamarque, the paler coloured grandparent of Maréchal Niel, from which the latter descended through Isabella Gray. My experience of Lamarque was decidedly gratifying when compared with that of the other Noisettes to which I have referred. A much more reliable climber than any of these is an almost white and richly fragrant Hybrid Noisette—Madame Alfred Carrière. One of the grandest of yellow roses adapted for garden culture is the exquisitely beautiful lemon-coloured Medea, sent out by Messrs. William Paul and Son in 1891. Madame Hoste is also a highly effective variety—a native of Lyons—of refined form and pale yellow complexion. But I greatly prefer a much more modern introduction—viz., Le Progrès, of charming nankeen yellow hue, vigorous in growth, and extremely floriferous. It was recommended to me two years ago by Mr. Arthur Wm. Paul, when I was selecting roses for the gardens of Lochinch Castle, at the request of the Viscountess Dalrymple; and I now regard it, after considerable experience of its capabilities, as one of the most effective yellow roses in cultivation. Perle des Jardins is also a variety of great beauty; has lovely bronze-coloured foliage, and grows very vigorously. The climbing variety of this fine rose can create a splendid effect upon a south or west wall when adequately grown. So also can those beautiful derivations from the venerable Gloire de Dijon—viz., Bouquet d'Or and Belle Lyonnaise, both of which grow and flower admirably here, even when grown on a northern wall. They inherit their hardy and vigorous characteristics from their famous parents. Rêve d'Or is also a Noisette climber of great fascination, but it does not flower with equal facility. Of the hybrid Wichuraianas, the finest is Gardenia, whose complexion, rich yellow in bud-form, gradually grows paler as the flower expands. But the loveliest of all Roses of this special colour is Rosa Harrisonii. *David R Williamson, Manse of Kirkmaiden, Wigtownshire.*

THE SOUTH AFRICAN COMBRETACEÆ.

(*Continued from p.* 164.)

12.—COMBRETUM WOODII,§ *Dümmer*, sp. nov.

A small tree, 5 m. high; second year's branchlets stout, terete, greyish or brownish; twigs opposite, leafy, compressed, angular, with prominent pulvini, pale madder-brown, lepidote, glabrous; internodes averaging 2 cm. long. Leaves subopposite, large; petiole grooved ventrally, 4 to 6 mm. long, minutely puberulous or glabrous; leaf-blade elliptic, acute at both ends or acuminately cuspidate above, almost cuneate towards the base (rarely rounded), 6 to 10 cm. long, 3.5 to 4.3 cm. broad, membranous, dark green and papillate above, paler and thickly lepidote beneath, glabrous on both surfaces, the midrib and 6 to 8 pairs of yellowish veins raised on the lower surface. Spikes slender, axillary and solitary, much shorter than the leaves, cylindric, averaging 1.3 cm. long, and about 1 cm. broad, the peduncle glabrous towards the base, madder-brown, 1 to 1.5 cm. long. Bracts subulate, shorter than the lower half of the thinly lepidote glabrous receptacle. Receptacle 4.7 to 5 mm. long, its lower half narrowly ellipsoid, subtetragonal, subpersistent, its upper half infundibuliform-campanulate, deciduous, 4 to 4.5 mm. diameter; disk obsolete; calyx-segments broadly triangular, ciliolate.

Petals minute, spathulate or oblanceolate, not exceeding 1 mm., glabrous, whitish. Stamens averaging 4 mm. long, glabrous. Style stout, glabrous, not exceeding the stamens; stigma minute. Fruit four-winged, pedicellate, elliptic, rounded or truncate at the apex, rounded at the base, 1.5 to 2 cm. long, 1 to 1.4 cm. broad, glabrous and slightly shining, the body brownish or chestnut-brown, lepidote, the wings lemon-yellow, 4 to 5 mm. broad.

Eastern Region.—Natal, in bush near Berea, Durban 36 m., Sept., 1885, Wood, 522 (flow. spec.) *Herb. Brit. Mus.*

Kalahari Region.—Transvaal, Hillsides, Kaap Valley Barberton, 690 m., Nov., 1896, Galpin, 1176.

Galpin's specimens were associated by Engler and Diels with C. Kraussii, but they differ from that species in the membranous leaves, which are broadest about or below the middle (not above), their upper papillate surfaces, and the narrower, elliptic, wholly glabrous fruit. I have pleasure in associating this species with Mr. Medley Wood, Director of the Natal Botanical Gardens, an indefatigable contributor to our knowledge of the Natalian flora.

§ C. Kraussii affine sed foliis ellipticis tenuioribus supra papillatis, fructibus ellipticis glaberrimis distinguit.



FIG. 81. VIEW IN ONE OF THE HOUSES AT RIVERVIEW NURSERIES, U.S.A., SHOWING PART OF CORRIDOR WITH HEATING VALVES AND VENTILATOR.

(See page 179.)

13.—C. SALICIFOLIUM, *E. Meyer* in *Drège Zwei Pfl. Geogr. Doc.*, 174 (1843).

A small spreading tree, scarcely exceeding 15 m. in height (rarely a divaricately-branched shrub), often branching from the base; trunk strumous, with light-grey bark; second and third years' branches terete, brownish or ashy-grey, with prominent nodes and crescentic-oval leaf-scars, the bark exfoliating in thin irregularly shaped plates; ultimate twigs slightly compressed, smooth, greyish-brown, rusty puberulous and lepidote, densely leafy. Leaves opposite, subopposite or alternate, invariably ascending, the petiole short, flattened and grooved above, convex below, pubescent or glabrous, 1 to 2 mm. long; leaf-blade lanceolate, narrowing equally from the middle to apex and base, obtuse or acute, rarely apiculate, 4 to 9 cm. long, 8 mm. to 2 cm. broad, firmly membranous, in youth lepidote on both surfaces, at maturity glaucescent, smooth and glabrous above, paler and distinctly lepidote below, with a prominently-raised midrib, and four to nine pairs of lateral veins, the latter usually 5 to 6 mm. distant, and with a few obsolete axil-tufts towards the base of the leaf; margin slightly recurved and faintly undulate. Spikes axillary, densely-flowered, invariably solitary, and much shorter than the leaves, capitate or almost globose, averaging 1 cm. in diameter, and borne on short pubescent and lepidote peduncles, 5 to 10 mm. long, or the axis is occasionally branched and compressed, and bearing several flower-heads. Flowers* yellowish; bracts minute, pubescent, deciduous. Receptacle 5 mm. long, the lower half narrowly torpedo-shaped and rusty pilose without, the upper shortly bell-shaped, 3 mm. in diameter, externally lepidote, more or less pilose within; disk plate-shaped, with a free wavy pilose margin; calyx-segments deltoid, acute. Petals more or less clawed, spathulate, 1.2 to 2 mm. long, the claw oblanceolate or obovate, 0.8 to 1 mm. broad. Stamens glabrous, 5 to 6 mm. long. Style glabrous, not exceeding the stamens; stigma obtuse or truncate. Fruit elliptic or suborbicular, subacute or rounded at the apex, rounded or truncate at the base, 1 to 1.9 cm. long, 9 mm. to 1.7 cm. broad, dark straw-coloured, the body darker and thickly white lepidote, the wings 3 to 4 mm. broad and faintly lepidote; pedicel 3 to 5 mm. long, lepidote.

* Sonder as also Sim, state that the flowers are polygamous, but I have not observed this in the material examined.

Hooker, *Icones Plant.*, vi, t. 592 (1843). Sonder in Harv. and Sond., *Fl., Cap.*, ii, 511 (1862). Engler and Diels in Engler's *Mon. Afrik. Pfl.*, iii (Combret), 27 (1899); Sim, *For. Fl. Cape Colony*, 222, t. 69, f.iii (1907). Wood in *Trans.* Phil. Soc. S. Africa, xviii, ii (1908), 156. Sim, *Forest Fl. Portuguese East Africa*, 64 (1909). C. conglomeratum, Bergius ex Engler and Diels, l.c. C. caffrum Kuntze, *Rev. Gen. Pl.*, iii, ii, 87 (1893). Dodonæa caffra Ecklon and Zeyher *Enum*, 55 (1835). D. conglomerata and D. dubia, Ecklon and Zeyher, l.c. 55.

Coast Region.—Uitenhage Div. Samsees Vlakte, near Enon, below, 170 m., Oct., 1829, Drege, a (flow. spec.), between Groot and Klein Visch Rivers at 600-900 m., Oct. 1829. Drege. Klein Winterhoek Berg, between Zoutpansnek and Enon, below 300 m., March, 1830. Drege 6849 a, 6849 b (fruit. spec.). On the banks of the Sunday's River, below 170 m., Dec., 1829, Drege, 2305 (spec. with immature fruit). Banks of the Keiskamma, below 170 m. January, 1830, Drege. Sunday and Fish Rivers, Zeyher, 776 (fruit. spec.); Nov., Burke (flow. spec.). Fort Beaufort Div., Kat River, Ecklon and Zeyher, 421; Oct., Ecklon and Zeyher, 422 (flow. spec.), 210-300 m., Baur, 1076 (fruit. spec.). Albany Div., at Zantje's Kraal, on the banks of the Fish (Visch) River, 450 m., MacOwan, 1176 (flow. spec.). Stony ridges, Niemand's Kraal, Grahamstown, Oct., 540 m., MacOwan, 1176 (flow. spec.). Fish River, MacOwan, 1088 (fruit. spec.). Between the source of the Kasuga River and Assegai Bush, Oct., 1813, Burchell, 4165 (flow. spec.); Dec., Ecklon and Zeyher, 421 (fruit. spec.). Beside rivers near King William's Town, Scott-Eliott, 942. Komgha Div., Gonubie River, 600 m. Dec., 1894, Schlechter, 6140 (immature fruit. spec.). British Kaffraria, 1860, Cooper, 226 (flow. spec.); Ecklon and Zeyher, 421; Mrs. F. W. Barber (flow. spec.); Dr. Gill (fruit. spec.).

Central Region.—Somerset Div., by the Great Fish River, on the western side at Van Aardts, June, 1813 Burchell, 3249 (fruit. spec.).

Essentially a species of coastal distribution, occurring from Uitenhage along the east coast through Natal into Portuguese East Africa, where in the last-named territory Sim mentions that it frequents the rivers of Maputa and Marracuene, and is also present in the M'Chopes, and on the Lecungo River, Magenja da Costa, where it goes under the name of "Umdubu," "Mbondo-m-hlope," and "No-onya." The tree abounds in Cape Colony, especially in the Perie Bush and more northwards, usually favouring the banks of rivers and streams, whence the name Bush-Willow or "Umdubu"; but is rare in Natal, as Director Medley Wood mentions having only seen one tree. The leaves are deciduous or tardily deciduous, and at fall turn like certain of its allies to a lively red. Burchell alludes to this tree also as the "Vaterland's Wilgen Hout." The timber is yellow and dense, but not durable, and is reputed to be used for firewood and rough farm work, and occasionally for making naves.

14.—C. TENUIPES, *Engler* and *Diels*, l.c. 13, t. 3, f.B.

A twiggy shrub, 2 to 3 m. high; two to three year-old branchlets teretish, with thin stringy



FIG. 82. CULTIVATION OF PHŒNIX ROEBELINII IN THE RIVERVIEW NURSERIES, U.S.A.
(See page 179.)



FIG. 83. DRACÆNA MASSANGEANA IN THE RIVERVIEW NURSERIES, U.S.A.
(See page 179.)



FIG. 84. ANANAS SATIVUS VARIEGATA IN THE RIVERVIEW NURSERIES, U.S.A.
(See page 179.)

brownish bark; ultimate twigs greyish or brownish, lepidote, sparingly puberulous and leafy, the internodes 1.5 to 2.5 cm. long. Leaves subopposite, ascending or patently spreading; petioles slender, slightly swollen at their insertion, 8 mm. to 1 cm. long, puberulous in the ventral furrow, lepidote; blade ovate or subelliptic, usually rounded at the base, 3.5 to 5 cm. long, 1.5 to 2.5 cm. broad, firmly membranous, light glaucescent green and glabrescent above, slightly paler and thinly lepidote below, the raised midrib and three to four pairs of principal lateral veins occasionally with a few minute scattered hairs, otherwise glabrous; margin obscurely serrate, and often closely undulate towards the apex. Spike axillary or terminal, leafy towards the base, simple or branched, 6 cm. long or longer, the axis lepidote and puberulous; flowers yellowish; bracts minute, deciduous. Receptacle (immature?) lepidote and glabrous externally, the lower portion fusiform and slightly swollen about the middle, 1.5 mm. long, the upper portion saucer-shaped, about 2 mm. in diameter; calyx-segments deltoid, acute; disk with pilose margin. Petals spathulate, subacute, 1.3 mm. long, glabrous, whitish. Fruit numerous, four-winged, borne on lepidote pedicels, scarcely 1 mm. long, broadly elliptic, rounded or truncate at both ends, 1.3 to 1.5 cm. long, 1 to 1.2 cm. broad, the wings 5 mm. wide, yellowish and sparingly lepidote, the body brownish and thickly lepidote.

Burtt-Davy in *Transvaal Agric. Journal*, v. 424 (1906-07).

Kalahari Region.—Transvaal, Louw's Creek, Barberton 5 40 m., April, 1890, Galpin, 885 (flow. and fruit. spec.).

C. tenuipes is only known from the collections of Galpin, which are also in the Herbarium at Zürich, and as the Kew material exhibits also the flowering stage, a description of the flowers is appended.

15.—C. PATELLIFORME, *Engler* and *Diels* in Engler's *Mon. Afrik. Pfl. Fam.* III (Combret.), 12, t. l., f.C. (1899).

A shrub or small tree (?); ultimate branchlets short, slender, teretish, pubescent. Leaves opposite, occasionally alternate, ascending or spreading, two or three times as long as the internodes; petiole 2 to 3 mm. long, pubescent; blade narrowly elliptic or oblong-oval, with an obtuse slightly apiculate or obtusely subcuspidate apex, rounded or subcordate at the base, 2.5 to 5 cm. long, 1.2 to 2.5 cm. broad, firmly membranous, dark green above, and sparingly pilose on the sunken midrib and nerves, paler and distinctly lepidote beneath, with a prominent midrib and four to seven pairs of lateral veins, inconspicuously axil-tufted, almost glabrous at maturity except for the puberulous midrib; margin slightly wavy. Spike solitary (or in threes), 5 to 6 cm. long, terminating short lateral leafy shoots, averaging 4 cm. long, simple or occasionally with two lateral branchlets towards the base, the linear-subulate pubescent deciduous bracts subequalling the lower portion of the receptacle. Flowers bright yellow. Receptacle thickly lepidote externally, its lower part narrowly primatic-cylindric and 5 mm. long, its upper portion flattened and plate-like, 2 to 2.5 mm. high, 6 to 7 mm. in diameter; disk thickly fleshy, papillose, four-lobed, the lobes slightly emarginate or truncate. Calyx-segments spreading, broadly triangular, 2 mm. long, with an acute or acuminate apex. Petals minute, clawed, lanceolate, subacute, 2 mm. long, glabrous and yellowish with a crispate margin. Stamens short, incurved, 2 to 3 mm. long. Style stoutly subulate, obtuse, subequalling the stamens in length. Fruit unknown.

Engler and Gilg in Warburg's Kunene-Zambesi Expedition, 314 (1903).

Eastern Region.—Delagoa Bay Region, Delagoa Bay, in the bush, Dec., 1897, Schlechter, 11,957 (flow. spec.).

A seemingly rare plant discovered by Dr. R. Schlechter in the locality cited. The type specimen is in the Berlin Herbarium, of which Kew possesses fragments. It was subsequently collected by Baum not far from the Kuito River (Angola) in the well-nigh impenetrable thickets, termed "Elephant-bush," at elevations of 1,500 metres.

16.—C. JUNODII, ‡ *Dümmer*, sp. nov.

A shrub or small tree, 1 to 6 m. high; second year's twigs teretish, ashy-grey; leaf-scars conspicuous, inversely horse-shoe shaped; ultimate twigs terete towards the base, compressed and subangulate towards the extremities, greenish or brownish, glabrous and sparingly lepidote at maturity. Leaves opposite, spreading; petiole grooved above, convex below, glabrous and lepidote, or pubescent in the furrow, 5 to 7 mm. long; leaf-blade elliptic-oblong or obovate-oblong, rounded, and abruptly cuspidate, the cusp obtuse, rounded at the base, 4.5 to 7.5 cm. long, 2.5 to 4.5 cm. broad, thin in texture, glabrous on both surfaces except for the presence of brownish axil-tufts on the lower, dark dull green and sparingly lepidote on the upper, much paler beneath and thickly pale-greenish lepidote, the midrib relatively broad but scarcely prominently raised, and with its five to eight pairs of lateral nerves sparingly lepidote or scaleless; margin subundulate. Spikes axillary, solitary, cylindric, 2 to 3 cm. long, averaging 1.3 cm. broad, the peduncle glabrous and lepidote below, 1 cm. long, sparingly pilose above; flowers pale green; bracts narrowly deltoid, 1.5 to 2 mm. long. Receptacle pilose and lepidote externally, 6 to 7 mm. long, its lower half obfusiform, its upper infundibuliform and broadly campanulate, 4 to 4.5 mm. in diameter, externally lepidote; disk villous on the margin; calyx-segments broadly triangular, subacute, ciliolate. Petals clawed, 1.7 to 2 mm. long, with a reniform limb, 2.5 mm. broad, glabrous, whitish. Stamens 3 to 4 mm. long, glabrous. Style stout, glabrous, not exceeding the stamens; stigma truncate. Fruit unknown.

Kalahari Region.—Transvaal; hills, Shilouvane, Sept., 1899, Junod, *Herb. Kew*, 613.

17.—C. SULUENSE, *Engler* and *Diels in Engler's Mon. Afrik. Pfl. Fam.* iii., 54, t. 14, f.G. (1899).

A small tree, 5 m. high; second year's branchlets terete, ashy-grey or pale brown, longitudinally striate, glabrous; twigs opposite or subopposite, teretish at the base, compressed and angular towards their extremities, greyish-lepidote, sparingly pilose or eventually glabrescent.; internodes 1 to 3 cm. long; buds sparsely or densely pilose. Leaves subopposite or alternate oblong or elliptic, narrowing at apex and base, tipped by an occasionally recurved apiculus, 5 to 9 mm. long, 2.5 to 3.5 cm. broad, thinly coriaceous, light green and glabrous above, with scattered orbicular scales, thickly and silvery-white lepidote below, the raised midrib and six to eight pairs of brownish veins almost destitute of scales at maturity; axil-tufts very minute; margin ciliolate; petiole slender, pilose in the groove, otherwise silvery-lepidote, 8 to 15 mm. long. Flowers unknown. Fruit pedicellate, narrowly four-winged, oblong, widest above the middle, apex subacute, tapering to a narrow truncate base, 4.8 cm. long, 2 cm. broad, densely and minutely puberulous, pale and dull madder-brown, thickly lepidote, the wings 3 to 4 mm. broad; pedicel 5 to 6 mm. long, lepidote; peduncle 3 cm. long, sparingly pubescent.

Burtt-Davy in *Transvaal Agric. Jour.*, v. (1906-07), 424.

Eastern Region.—Swaziland, Horo Concession, 600m., Dec., 1890, Galpin, 1,264 (*Herb. Kew*).

C. suluense is easily distinguished by its glabrous leaves, which are, moreover, covered with silvery-white scales, and the curious elongate fruits, which, however, in the specimen under examination are somewhat immature. Flowers are as yet unknown.

18.—C. MICROPHYLLUM, *Klotzsch* in *Peters Reise Mossamb.* Bot. i., 74 (1862).

An erect or scandent very floriferous shrub or small tree, 3 to 6 m. high; branches subsimple (or with a profusion of very short patent lateral densely flowering twigs), straight or occasionally tortuose, terete, ashy-grey and pilose, the lateral twigs densely ferruginously sericeous or pilose. Leaves opposite or alternate (rarely three to four in a whorl), longer than the internodes, or occasionally twice or three times as short, those on the barren shoots broadly elliptic, obovate or suborbicular, rounded both at apex and base, or with a very short apiculus or abruptly pointed cusp, 2 to 7.5 cm. long, 1 to 4.5 cm. broad, thinly leathery, dark green and eventually glabrescent and sparingly lepidote on the upper surface, much paler beneath, sparingly pilose, with a prominent midrib, and three to five pairs of lateral veins, but inconspicuously reticulated; margin flat or slightly undulate; petiole subgeniculate at the base, rufo-villous, 4 to 7 mm. long. Lateral flowering twigs 2 to 8 cm. long, the foliaceous bracts subtending the individual three- to ten-flowered racemes, rarely exceeding 1 cm. long, usually smaller; bracteoles minute, subulate, deciduous. Flowers shortly pedicellate or subsessile, scarlet. Receptacle ferruginously sericeous-villous externally, fusiform at the base, bell-shaped above, the lower part 3.5 to 4 mm. long and 1.2 mm. broad, the upper 4.5 to 5 mm. long and 2.5 mm. broad; disk cup-shaped, fleshy, villous; calyx-segments almost obsolete, acute. Petals shortly clawed, 2 mm. long and broad, the blade subreniform, emarginate. Stamens glabrous, 1.2 cm. long, with reddish anthers and filaments. Style filiform, glabrous, shorter than the stamens; stigma minute. Fruit shortly stalked, four-winged, suborbicular, with an emarginate apex and rounded base, 2 to 2.5 cm. in diameter, the wings much broader than the seed-bearing cavity, 0.8 to 1 cm. broad, brownish and shining, and faintly lepidote; pedicel 3 to 4 mm. long.

Lawson in *Oliv. Fl. Trop. Afric.*, ii., 427 (1871). Engler and Diels in *Engler Mon. Africk. Pfl. Fam.*, iii., 70, t. xxi., f.A. (1899). Sim in *Forest Fl. Portuguese East Afr.*, 63 t. lxii., f.A. (1909).

Eastern Region.—Delagoa Bay Region; bushland, near Mathibis Kom, between the Lebombo Mountains and the Komati River, 150 m., 1886, Bolus, 7612 (flow and sterile spec.) Littoral bushland, Delagoa Bay, 150 m., Aug., 1886, Bolus 1156 (flow. and sterile spec.).

Kalahari Region.—Transvaal, Crocodile River, Mrs. M. Barber, 5.

The species extends into the Zambesi Region,* Portuguese East Africa, and further northwards into Nyassaland, where in the former locality it is reputed to climb to the tops of the highest trees, producing a most picturesque effect when in flower. The vernacular names "Mhlalavan" and "Hlaba-konkonya" apply to this species in Portuguese East Africa, but it is highly doubtful whether the species Sim describes under this name is the true plant, as he mentions the flowers to be yellow, while in authentic specimens the stamens, constituting the most conspicuous portion of the flowers, are distinctly carmine or ruby-red. This plant of Sim abounds at Umbelusi and Lebombo, and has hard durable timber, which is, however, often gnarled and unsound. Bolus's specimens (No. 1156) were distributed under the name of C. paniculatum, Vent. The flowers are sucked by the natives of Rhodesia for the honey they contain. *R. A. Dümmer.*

(To be continued.)

‡ C. Woodii, Dümmer affine sed foliis abrupte cuspidatis supra haud papillatis subtus ubique dense lepidotis costis latioribus complanatis in nervorum axillis barbatis, receptaculo extra piloso differt.

* Here on the Manganja Hills it is known as "Kotimo."

PUBLICATIONS RECEIVED. — ***Mittellungen der Deutschen Dendrologischen Gesellschaft, 1912.*** Secretary, Herr L. Beissner, Botanischer Garten, Poppelsdorf-Bonn.— ***Report of the Botanical Department of the New Jersey Agricultural College Experiment Station, New Brunswick, N.J., for the Year 1911.*** — ***Transactions and Proceedings of the California Association of Nurserymen,*** Secretary, Mr. Henry W. Kruckeberg, 237, Franklin Street, Los Angeles, U.S.A. — ***The Studio Year-Book of Decorative Art*** (London: "The Studio," Ltd.). — ***The Culture of Vegetables and Flowers from Seeds and Roots.*** By Sutton & Sons (London: Simpkin Marshall, Hamilton, Kent & Co., Ltd.). Price 5s. net.

The Week's Work.

PLANTS UNDER GLASS.

By F. JENNINGS, Gardener to the DUKE OF DEVONSHIRE, Chatsworth, Derbyshire.

CARNATION SOUVENIR DE LA MALMAISON.—As the sun gains strength it is advisable to shade "Malmaison" Carnations during the hottest part of the day, when the houses should be damped and fire heat dispensed with. Never allow the roots to suffer from want of water, and feed them regularly as advised previously. Young plants should be kept as cool as possible, regulating the temperature by ventilation. Fumigate the plants once a fortnight at this period of the year to destroy aphis. Border Carnations grown in pots should be treated in much the same manner as "Malmaisons," regulating the temperature of the house according to the period of the year when the flowers are required.

GLORIOSA SUPERBA & G. ROTHSCHILDIANA.—The bulbs should be potted in 9- or 10-inch pots in a mixture of peat, loam, and leaf-mould in equal parts, with plenty of coarse sand and a little decayed cow manure added. When the top growth appears water the roots freely, and train the shoots up the roof of a stove or other warm house.

EUPATORIUM RIPARIUM.—Cuttings of this plant inserted now will provide useful stock for autumn and winter-flowering. Insert three cuttings in each 60 sized pot, and root them under a close frame or bell-glass in a moderate bottom heat. When rooted harden them off on a shelf, and when increased root room is necessary transfer the plants to 4½-inch pots. Pinch the leading shoots to promote a bushy habit of growth. Later the plants may be transferred to 7-, 9-, or 10-inch pots as necessary. The potting soil should consist of rich loam, leaf-mould and sand, with a small quantity of fine bones.

WINTER-FLOWERING ZONAL-LEAVED PELARGONIUMS.—Plants of Zonal-leaved Pelargonium propagated from cuttings inserted in December should be well established in large 60 sized pots and ready for transferring to 5 or 6 inch pots, according to the vigour of the individual specimens. At the same time. the leading growths should be stopped. The soil for the final potting should consist of rich loam, mixed with leaf-mould, sand, and a little mortar rubble to keep the compost open, with a 24 pot-full of fine bones, and the same quantity of soot added to each barrowload of the mixture. After the potting is finished, soak the soil with water and stand the plants in a warm house until they commence to grow, when they should be hardened gradually. As soon as the growths are of a sufficient length stop them, removing the extreme tips of the shoots only. Plants that are required for flowering late in October or in November should not be stopped later than at the end of August or the first week in September; this is a very important detail in the case of plants grown in gardens in the northern parts of the country. Apply stimulants frequently when the pots are filled with roots, and see that the plants do not suffer from want of water.

EUPHORBIA JACQUINIÆFLORA.—Plants that have been kept perfectly dry at the roots, or subjected to a cool treatment, should be placed in a warm house to furnish a supply of cuttings. They should be syringed freely in the daytime, until growth commences, when the soil in the pots should receive a thorough soaking of water. When the shoots have grown to a suitable length they should be taken off with a heel of the old wood attached, and inserted, either singly in thumb pots, or three in each small 60 size pot. The compost should consist of finely sifted loam and sand in equal proportions. Place the cuttings under a bell glass or in a frame, and provide them with bottom heat. After they are rooted, harden them gradually, preparatory to placing them on a shelf in a stove. As soon as they require increased root-room shift them into 3½ inch pots, filled with a mixture of loam and leaf-mould in equal parts, with sand added to keep the soil open. At the final potting employ receptacles having a diameter of 6 inches, and use a similar compost to that advised above, but adding small quantities of dried cow manure and wood-ashes. Train the growths to the rafters of the stove where they will flower.

PLANTS FOR EDGINGS OF STAGES.—Cuttings of Pilea muscosa, Ficus repens, Panicum, Tradescantia, and other plants used for edgings in plant houses may be inserted. Nothing gives a plant house a more pleasing appearance than well-grown edging plants, but old, neglected specimens harbour insect pests and are unattractive. The plants should be renewed frequently during the summer months. Caladium argyrites makes a very effective edging for the stages of the stove during the summer months. Isolepis gracilis should be divided and replanted at intervals.

THE FLOWER GARDEN.

By EDWARD HARRISS, Gardener to Lady WANTAGE, Lockinge, Berkshire.

LAWNS AND PATHS.—The grass is growing freely, and the mowing machines should be got ready for use at once. Before the first mowing is commenced let the lawns be swept thoroughly with a birch-broom when the ground is dry. The broom will not only remove twigs and other rubbish, but also scatter worm casts, which are very plentiful this season. The sward should afterwards be rolled. Impoverished lawns should be dressed with fine soil and manure. Certain kinds of artificial manures are beneficial to grass, but not all, and unless the nature of such manures is well understood it is best to apply special lawn manure obtained from the sundriesman. Where it is intended to make new lawns on ground that was prepared several weeks ago irregularities in the surface should be removed and the first favourable opportunity taken to sow the seed. The work of trimming the edges of lawns and grass verges should be carried out before the busy season commences. The renovating and regravelling of paths and roads should also be completed.

PRUNING ROSES.—A commencement may be made with the work of pruning Roses, starting with the Hybrid Perpetuals. Inexperienced pruners invariably neglect to cut out sufficient of the shoots, notwithstanding that there is always a large amount of worthless growth in the plants, unless they have been disbudded in the summer. This unprofitable wood should be cut out first, after which the remaining shoots, especially those in the middle of the bushes, should be suitably thinned and shortened. Shoots of moderate strength may be shortened severely, leaving the stronger ones rather longer. Certain varieties require special treatment, and their needs in this respect can be seen easily when carrying out the work. Isolated specimens may be allowed to develop more growth than plants in beds, but if they show signs of weakness the shoots must be thinned out or pruned hard. China roses may also be pruned now. They may either be pruned hard or allowed to make large bushes, according to the position they occupy. The common China or monthly Rose is useful for forming low hedges. The pruning of Teas and Noisettes may be deferred until the end of the month or early in April. Specimens of these types of Roses growing in beds must, of necessity, be pruned fairly hard, but those on walls only require to be thinned, and the longest growths shortened a little. It is, however, sometimes an advantage to cut a shoot here and there almost to its base to encourage fresh growths to develop from the lower part of the plant. The pruning of bush Roses which have been planted this season should be deferred for as long as possible. Examine the stakes supporting standard Roses, with a view to replacing any that are decayed. Plants that have failed in the beds should be made good with specimens in pots, as it is late for planting Roses from the open. After the pruning is finished fork over the soil in the beds, and afterwards apply well-decayed cow manure as a mulch.

CLIMBING ROSES.—In most cases Climbing Roses are best pruned directly they have finished flowering. This system favours the ripening of the young flowering shoots, and well-matured wood is less liable to injury during times of frost, as it does not break into growth so readily in the spring. Protecting materials should be removed from the plants, the work of pruning or thinning brought to a close, and the shoots tied securely to their supports. Newly-planted Roses should be pruned moderately hard the first season to cause strong shoots to grow from the base. Climbing Roses may be effectively employed in bold schemes of rockwork. When used in this manner they need a severe thinning of the branches annually.

EDGINGS OF BOX.—Any dead plants which may be noticed in the Box edging should be pulled up and replaced either by young plants from the reserve garden, or cuttings. Edgings or banks of Box may be formed by inserting cuttings obtained from trees of good habit and colour. At the same time it is wise to insert a number of cuttings in the nursery to furnish plants for a reserve.

THE ORCHID HOUSES.

By W. H. WHITE, Grower to Sir TREVOR LAWRENCE, Bart., Burford, Dorking.

THUNIA.—The plants are commencing to grow at the bases of the new pseudo-bulbs, and the present is the best time to shake them out and re-pot them, as they require fresh rooting material once a year. The most convenient method is to plant about half a dozen stems at about 3 inches apart in a good-sized pot half filled with crocks, which should be covered by a thin layer of good turfy loam, into which the roots will penetrate just about the time when the flower buds begin to appear. Pot the plants moderately firm in a compost of yellow fibrous loam, fibrous peat, and Sphagnum-moss in equal parts, adding a few handfuls of small crocks to keep the soil porous. Mix the materials well together, and in potting keep the base of the young growths just below the rim of the pot, just resting on the surface of the compost. Each stem requires a stake to hold it firm. Choose the lightest position available in the warmest house and arrange them so that the tips of the old stems will be close to the roof-glass. For several weeks after re-potting afford water sparingly, but when the roots have pushed through the compost and the new growths have lengthened, moisture at the roots may be increased in quantity. When the plants are well established occasional applications of weak, liquid manure from the cowsheds will be beneficial. The flowering season is May and June, and the best sorts are T. Bensoniæ, T. Marshallii, T. M. alba, T. candidissima, T. Veitchii, and T. Brymeriana.

MISCELLANEOUS ORCHIDS.—Immediately such species as Spathoglottis Regnieri, S. Fortunei, S. Lobbii, S. Ericssonii, S. Kimballiana, S. aurea, and S. Augustorum, commence to grow they should be re-potted in a mixture of fibrous loam—Osmunda fibre, Sphagnum-moss, and leaf-mould in equal parts, using plenty of drainage materials. Place the plants in a shady position in a warm house and afford copious root-waterings till growth is completed. The distinct Odontoglossum Uro-Skinneri may be re-potted in a mixture of equal parts Osmunda fibre, A1 fibre, and Sphagnum-moss. It is important to keep the base of these plants well above the rim of the pots as the pseudo-bulbs are liable to become diseased if the growths are placed low down in the soil. The species requires plenty of water when in active growth, but should be kept on the dry side whilst resting. Grow the plants in a rather dry, airy position in a cool house. O. cordatum and O. maculatum may be treated similarly.

RE-POTTING.—The plants in the Orchid houses are responding to the influence of the fine weather, and flower buds which a few weeks ago seemed to be making but little progress are in full beauty, whilst new roots and top-growth show that the resting season is over. No time should be lost in re-potting or re-surfacing with fresh Sphagnum-moss such plants as Aërides, Saccolabium, Angræcum, Vanda, Stauropsis,

Renanthera, and Arachnanthe, for many of these Orchids will soon be sending forth fresh aërial roots, which are easily injured when the plants are disturbed. Vanda Watsonii, V. Kimballiana, and its rare variety alba, are also starting to grow, and any necessary potting should be done at once. These plants grow equally well in either pots or shallow teak-wood baskets, but the latter receptacles are generally preferred, as they allow a freer circulation of air amongst the roots. The plants should be grown close to the roof glass, in the lightest and best ventilated part of the Cattleya house. As the roots grow in the air in all directions, it is advisable to syringe them occasionally, and to keep the immediate surroundings of the plants moist during growth. It is also advisable to train as many of the aërial roots as possible to grow into the compost.

Aerides cylindricum. — The terete-leaved species A. cylindricum is in bloom; it should be grown in a very light position in a cool house, with its foliage nearly touching the roof glass.

THE KITCHEN GARDEN.

By John Dunn, Foreman, Royal Gardens, Windsor.

Carrots in Pits.—Carrots raised from seed sown in January should be ready for thinning. Allow a distance of 3 inches between the plants of small-growing varieties, and 1 inch more for larger-growing sorts. After the work of thinning is completed the bed should be watered carefully with soft water to settle the soil about the roots. Keep the pit closed for a few days, but later, when the plants begin to grow freely, admit air in sufficient quantity to prevent the shoots from becoming drawn. A sowing may be made out-of-doors on a warm south border. Make the soil as fine as possible, and sow in drills made 9 inches apart and 1 inch deep, covering the seeds lightly with fine soil. When the seedlings appear, work the Dutch hoe freely between the rows to destroy weeds and promote a free growth in the carrots. If slugs are troublesome, dust the crop lightly with soot on several occasions.

Seed-sowing. — The principal sowing of Brussels Sprouts should be made on a sheltered border with as little delay as possible. This vegetable requires a long season to grow to maturity, and although seeds were sown under glass a month ago for early supplies, the best results may be expected from plants which have been grown in the open from the beginning, and it is only for very early supplies that the plants should be forwarded under glass. If shallow drills are formed at one foot apart, the Dutch hoe may be used freely between the rows as soon as the seedlings appear. Stirring the soil will promote a free growth in the plants, and keep small weeds in check. When the seedlings are large enough to handle they should be pricked out into nursery beds, allowing a space of 4 inches between the plants. Later they should be planted permanently in well-prepared ground at a distance of 2½ feet between the plants each way. The varieties Ideal and Dwarf Gem may be selected if firm, medium-sized sprouts are desired, but if larger sprouts are required, select Sutton's Exhibition. A sowing of Cabbage may also be made to furnish plants that will be ready for use in July and August. Sowings of Cauliflower should be made every three weeks from now onward to the middle of May, to maintain a continual daily supply of this vegetable throughout the summer and autumn. The seeds should be sown thinly in rows, and the seedlings planted as soon as they are large enough, in ground which has been specially prepared for them. The soil for this crop can scarcely be too rich. The plants should be well watered at the roots directly they are planted, for if they are allowed to become dry they will grow stunted, and then failure is almost sure to result. Magnum Bonum, Early London, Autumn Giant, and Hallowe'en Giant are reliable varieties; the last-named is grown extensively at Frogmore for maintaining a supply of green vegetables in the interval between the autumn Cauliflowers and early Broccoli. Young plants raised under glass should be pricked off as soon as they have made their first rough leaves; this is an important detail. The soil for the purpose should be passed through a fine sieve, in order to avoid breaking the roots when the final planting takes place. Admit air freely as soon as the plants are established, in order to prepare them for planting in the open.

Lettuce. — Lettuce plants raised from the earliest-sown seeds should be ready for planting in cold frames. The soil should be light and rich and placed to within one foot of the roof-glass, so that the plants may receive plenty of light. A space of 9 inches should be allowed between the plants each way. After planting, the soil should be watered carefully through a fine rose, rain water being the best for the purpose. Afford only a little ventilation until the plants are well established, when the lights may be opened during warm weather, and the soil stirred with the Dutch hoe. If slugs are troublesome, the edges of the bed should be sprinkled with soot or lime. Lettuce seeds may now be sown on a warm border, and the plants may be expected to furnish supplies early in June. The best way to secure an unbroken supply of Lettuces throughout the season is to make small sowings every ten days, choosing, as the season advances, cooler situations and suitable varieties. Liberal supplies of water should be afforded the roots to secure crispness in the leaves and freedom of growth. Pioneer and May King are two good early Cabbage Lettuces, whilst Mammoth White Cos may be recommended for early supplies in summer.

FRUITS UNDER GLASS.

By James Whytock, Gardener to the Duke of Buccleuch, Dalkeith Palace, Midlothian.

Pine Apples.— Pines which have recently been placed in the fruiting pots will need close attention. The proper bottom heat is 85° to 90°, and if the warmth is provided by hot-water pipes, there will be no difficulty in regulating it; but if it is produced by fermenting manure, freshly made, it sometimes becomes too hot, and openings should be left around the plunged pots to allow gases to escape. Root development should be encouraged, but not too much top-growth; at no period should the plants be allowed to become forced by too great warmth, and during March and April a night temperature of 60° to 65° will be sufficient. In the daytime, if the temperature rises above 70°, ventilation may be allowed, and on bright, sunny days, when the thermometer registers 85° to 90°, the house should be closed early in the afternoon, allowing the temperature to stand at 80° for some time before dark. Newly-potted plants will probably not require water until the middle of next month, and it is always safer to err on the side of keeping them too dry than to over-water them. The paths and walls should be syringed, as it is necessary for the proper development of the foliage that the atmosphere should be moist. On sunny afternoons a slight overhead syringing will be beneficial.

Fruiting Pines.—If the bottom heat for the fruiting Pines is provided by a hot-air chamber, there will be no difficulty in keeping it at 90° or under. The average should be 70° to 75°, rising 10° to 15° in sunshine. Advantage should be taken of all available sunshine to force on the fruiting plants by shutting the ventilators of the house early in the afternoon, keeping the temperature at 85° to 90° for an hour or two afterwards, and sprinkling with water the surface of the plunging material and the paths and walls. A slight syringing overhead will also be advantageous. Careful attention should be paid to the watering of plants carrying fruits now swelling; they should not be allowed to become too dry, nor be sodden with damp. The fruits will swell better if a little guano is added to the water each time they are moistened. During the ripening of the fruits as much ventilation as possible should be given. Queen Pines, which are intended to mature their fruits in June and are now in flower, should have a mean temperature of 65° to 70°. On fine days the house should be ventilated, but must be closed early. The atmosphere should be kept rather dry until the flowering stage is over.

Vines. — Early permanent Vines which were started in January should be prevented from cropping heavily in their first year. Otherwise, the result of heavy cropping will appear in the small, unfinished state of the grapes this year, and in the permanent injury of the vines. In the case of old-established, vigorous vines, the grapes upon which are now entering the stoning period, a high temperature, with a close, damp atmosphere, should be avoided. This is the season of bright sunshine accompanied by cutting winds, and air should be admitted to the houses cautiously; if possible through some aperture which will warm it, rather than through the ordinary ventilators. If the soil of the borders is of a retentive nature and the roots near the surface, a light watering with some good vine manure will do good. A mulch of short manure will also be advantageous, but excesses of food and moisture at the roots must be guarded against. The mean temperature for the earliest varieties should be 60° to 65°; it should be lowest in the early morning. On bright days the house may be closed in the afternoon, and the temperature raised some 15°. The surfaces of the house should be damped, and this will be a good opportunity to water the borders with a sprinkling of manure-water. Successional vines which are now in flower should be allowed to enjoy a free circulation of air and rather a dry atmosphere; but the paths, walls, etc., should be frequently sprayed to prevent aridity. The shoots should be brought by degrees to the underside of the trellis, and should be stopped at a point two eyes beyond the flower bunch. All sub-lateral growths should be stopped at one eye from the shoot; the foliage must be encouraged to become strong and healthy, without overcrowding. The mean temperature should be 65° to 70°, rising 10° to 15° in sunshine. Muscats which are now in flower need a temperature of 70°, even in dull weather. Attention must be paid to pollination. The fruits will set freely in a warm temperature, especially in sunshine. The temperature may be allowed to rise to 90° on very sunny days.

THE HARDY FRUIT GARDEN.

By B. Goodacre, Gardener to Sir Ernest Cassel, Moulton Paddocks, Newmarket.

Pruning.—Although the work of Pruning is in the main completed there are still a few details that need attention. An examination of the wall trees should be made with a view to shortening to plump buds long and unsightly spurs on Plum, Pear, Cherry and Apricot trees. Although these long spurs are often more fruitful than the younger ones, they project so far from the wall that they derive very little warmth or shelter from the brickwork. These stout growths are best removed with a strong pair of secateurs, but care must be taken that the cut surfaces are made clean, as the wood is easily torn from the main branches when this implement is employed, leaving deep, unsightly scars, which persist for a long time. If it is necessary to use the pruning saw, the cut should be made in an upward direction, otherwise there is a danger of the bark tearing. After the work is finished smear a little clay or green paint over the wounds to render them less unsightly. When the pyramid trees were pruned a number of young shoots over and above those required were retained with a view to removing them later when the fruit buds can more easily be determined. This will be an easy matter now, and the unnecessary growths may be cut away. The leaders of pyramid trees may be shortened, cutting back the branch to a bud growing outwards. Endeavour to obtain a correct pyramidal shape, and avoid training the tree in a bell-fashion. For this purpose, stretch a line from the top of the tree at the main leader to the limit of the lower branches, and prune the intermediate shoots accordingly.

Manuring.—The loose dry straw of Manure that was applied as a mulch to the trees should be removed and the dung forked lightly in the soil. This will enrich the ground and encourage the roots to grow near to the surface, at the same time giving the garden a tidy appearance.

Birds and Fruit Buds.—Certain birds, and more especially the bullfinch, will soon cause considerable damage to the fruit buds, and should be shot or otherwise destroyed. If their destruction is objected to, means should be taken to render the buds unpalatable to them, by spraying the trees with such distasteful substances as extract of quassia and lime

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS**, 41, Wellington Street, Covent Garden, London. *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

Special Notice to Correspondents.—*The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

Illustrations.—*The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable plants, flowers, trees, &c., but they cannot be responsible for loss or injury.*

APPOINTMENTS FOR THE ENSUING WEEK.

SATURDAY, MARCH 29—
Paisley Spring Fl. Sh.

SALES FOR THE ENSUING WEEK.

WEDNESDAY NEXT—
Rose Trees, Perennials, Lilies, etc. At Stevens's Auction Rooms, King Street, Covent Garden, London. Herbaceous and Border Plants, Hardy Bulbs, etc., at 12; Palms and Plants at 5. At 67 and 68, Cheapside, E.C., by Protheroe and Morris.

THURSDAY NEXT—
Special Sale of Roses; also Fruit Trees at 1. At 67 and 68, Cheapside, E.C., by Protheroe and Morris.

FRIDAY NEXT—
Liliums and other Hardy Bulbs, Herbaceous and other Plants at 12; Orchids at 12.45; Roses and Fruit Trees at 1.30. At 67 and 68, Cheapside, E.C., by Protheroe and Morris.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich—42.7°.

ACTUAL TEMPERATURES:—
LONDON.—*Tuesday, March 18* (6 P.M.). Max. 43°; Min. 31°.
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—*Wednesday, March 19* (10 a.m.); Bar. 29.5°; Temp. 50°; *Weather*—Showery.
PROVINCES.—*Tuesday, March 18.*—Max. 43° Barrow; Min. 35° Peterhead.

What is Horticulture?

The National Diploma Committee appointed by the Board of Agriculture and the Royal Horticultural Society has accepted the finding of the larger R.H.S. Committee, and recommends the establishment of a Diploma in Horticulture. It has, moreover, confirmed the conclusion reached by its predecessor, that the Diploma examination shall be a test of professional ability: that is to say, it shall be awarded only to those who have had a proper training in horticulture, and who are able to demonstrate practically that they are proficient in the art and craft of gardening. These decisions will meet with the approval of all gardeners, and the work of the Committee in drafting detailed syllabuses will be followed with interest by everyone concerned with Horticulture.

The Committee, having concluded in favour of a Diploma, found itself compelled to ask the evidently pertinent question, What is Horticulture? We believe we are right in saying that, strange as it may appear, no member of the Committee was able to cite an accepted definition in answer to this simple question. Indeed, it is doubtful whether such a definition has ever been made. Yet, if the work of the Committee is to be satisfactory, and if the Horticultural branch of the Board of Agriculture is to watch over and foster the interests of horticulturists, it is not a matter of pedantic definition, but one of vital necessity, that the scope of Horticulture should be outlined. The definition laid down by the Committee appears to us to be excellent, and runs as follows:—Horticulture is a definite craft in itself and is not a department of Agriculture. It includes the more intensive cultivation, as practised in gardens, of fruit, vegetables, flowers, shrubs and ornamental trees.

The definition is ingeniously, and properly, contrived to include the designing as well as the maintenance of gardens, and to embrace the private garden, the market and fruit garden, the nursery, and the public park. Lying beyond and outside the scope of Horticulture are the field and the forest, the one the terrain of the agriculturist and the other the domain of the forester. Overlapping there must be; but, nevertheless, each of these three allied crafts has its special sphere of influence.

In accordance with this definition, the Committee recommends that the Diploma shall be so awarded as to be available to the following classes (in alphabetical order):—Florists, fruit growers, gardeners, horticultural inspectors, horticultural instructors, landscape gardeners, market gardeners, nurserymen, public park gardeners, and seedsmen.

Lastly, the Committee has decided that the Diploma shall be available to men and women on equal terms. This decision will also meet with general approval. Women who are willing to submit themselves to the same thorough course of practical training as that which men who seek the Diploma must undergo have an indisputable right to enter for a National Diploma.

We are confident that the establishment of the Diploma will be for the benefit of Horticulture, and will prove a boon to the rising generation of gardeners. It will not make them more proficient, but it will give them a goal at which to aim, and will serve to distinguish the real and efficient gardener from the more or less casual garden labourer, who is able at present to lay unchallenged claim to the name, and to bring the title of gardener into disrepute. We shall watch with interest the further work of the Committee, and in wishing it success we may congratulate it on the decision to take the horticultural public into its confidence by publishing reports from time to time of its progress and proposals, and thereby to invite the constructive criticisms of those whose judgment it values.

***Plant Diseases.**

This useful little book contains brief descriptions of some of the chief diseases to which plants are subject. The method which the author adopts — that of grouping together the various fungous and animal pests to which plants are each generally liable—has much to commend it; for it enables the gardener or farmer who has no expert knowledge in Phyto-pathology to diagnose a disease with a fair degree of certainty.

The translation is well done; but little or no attempt has been made to fill up lacunæ. For example, in the part of the introduction which treats briefly of the history of mycology the name of Berkeley is not mentioned; nor on p. 17, though a list of German workers is given, is there anything to lead the British reader to suppose that research in plant-pathology is being prosecuted actively and with success in this country or in America. A similar omission is to be observed from p. 41. The mycoplasm theory of Eriksson is mentioned, but from among the names of the critics of that theory that of the late Professor Marshall Ward is omitted. In the brief bibliography the author contents himself with citing Massee's Text-book (1899); but does not refer to that author's more recent and admirable volume on Diseases of Cultivated Plants. Although many of the chief diseases of farm crops and of fruit trees are mentioned, we find no reference to Silver Leaf disease, which is a serious trouble to fruit growers. The diseases of the Beet are dealt with in some fulness—as befits a German text-book, but no mention is made of the diseases of Celery, Tomato, Strawberry. The reference to streak disease on p. 48 is not to the streak disease which is the bane of Sweet Pea growers, but that caused in Barley by a species of Helminthosporium.

We do not agree with the statements on p. 59 with respect to Wet Rot and Dry Rot. So far as our experience goes, Fusarium solani (=F. oxysporum) induces always a dry rot in the Potato; wet rot being due to the activity of a bacterium. In connection with the former disease, mention might well have been made of the fact that it causes enormous losses in stored Potatos. The translator appears to advocate (on p. 84) inspection of imported fruit in order to keep out San José scale. Although the book is singularly free from errors, an unfortunate mistake occurs on p. 142, where green vitriol is described as copper sulphite. It would prove helpful if in subsequent editions the strength of Bordeaux Mixture were given in pounds and gallons instead of in litres and kilograms.

We find in the index no mention of lime-sulphur spray fluids nor of grease-banding.

* *Plant Diseases*, by Dr. W. F. Bruck. Translated by J. Ainsworth-Davis, M.A. (Blackie and Son, Ltd.) Price 2s. net.

Coloured Plate.—The subject of the coloured plate to be published with the next issue is Bougainvillea Sanderiana.

DAMPING OFF OF CONIFEROUS SEEDLINGS.—In common with many other young plants, Coniferous seedlings are apt to be attacked by fungi—such as Pythium Debaryanum and species of Rhizoctonia and Fusarium, which cause the plants to "damp off." From experiments made by Mr. CARL HARTLEY, published in the *Proceedings* of the Society of American Foresters, and reprinted in the *Quarterly Journal of Forestry*, it appears that the damping-off fungi may be destroyed by treating the soil of the seed bed, before the seeds are sown, with sulphuric acid, using 3-16ths of a fluid ounce per square foot of ground. Formaline is also useful, 1 ounce to 8 square feet being the amount necessary. If the former fungicide be employed, it must be put on a day or two before the seeds are sown, and as soon as germination begins the seed bed must be watered to prevent the seedlings from being injured by the acid which remains in the soil.

Coniferous Seeds and Seedlings.*—The author of this work, Mr. R. Hickel, has set himself the task of describing from his personal observation the characteristics of the seeds and seedlings of cultivated trees and shrubs, and has commenced this work with an account of coniferous seeds and seedlings. Considerable care has been taken by the author in the verification of the species described, and most of them have been cultivated and raised by Mr. Hickel himself. Each description is accompanied by valuable notes on the rate of germination, germinative capacity, and weight per unit of measure (grams per litre) of the seeds; hence foresters and nurserymen and others concerned in the raising of coniferous seedlings will find Mr. Hickel's work of real value.

Seed Testing.—If we may judge from the activity of the famous station at Zürich, the newly constituted seed-testing institution in Ireland will be kept busy. At present many English, Scotch and Irish firms send samples to Zürich, and it is probable that in course of time these samples will be sent to the home station. In a recent article on the Zürich station (*Journal* of the Board of Agriculture, December, 1912), Mr. James Long mentions the instructive fact that of Pine and Larch alone 21,800 samples of seed are sent to Zürich to be tested. The differences in the normal germination capacity of seeds of different species is remarkable, and deserves to be widely known. Whereas in the chief cereals the percentage of germination is high—about 97 per cent.—in many garden crops the seeds normally show a far lower percentage. Thus, Carrots have a percentage of germination of 60, Parsnips 45, Spinach and Tomatos 63, Onions 59, Leeks 58, and Parsley 56. These numbers apply, of course, to good and new seed. In old seed the power of germination is apt to fall off very considerably, although there are exceptions to this rule. It is, of course, well known that the seed of a bad harvest possesses a low percentage of germination and that the seeds of such a harvest germinate less regularly than those of a good harvest. Our knowledge with respect to the physiology of germination is still very rudimentary, and in particular we know very little as to the cause of the gradual or rapid loss in germination capacity which takes place when seeds are kept for some years. The well-known vagaries of seeds—the habit some have of germinating rapidly if sown before they are fully ripe, and the habit possessed by others of refusing to germinate till they have had a period of rest, present many interesting and unsolved problems to the physiological botanist.



Photograph by R. A. Malby.

Fig. 85. Androsace glacialis; colour of flowers, bright rose.

(See page 188.)

* *Graines et Plantules des Arbres et Arbustes indigènes et communément cultivés en France.* Première Partie, par M. Hickel. (Versailles: chez l'auteur, 11 bis, Rue Champ-à-Garde.)

Midland Daffodil Society's Show.—The secretary informs us that owing to the Royal visit to Birmingham on April 23 (the day originally fixed for the opening of this show), the dates of the exhibition have been altered to Tuesday and Wednesday, April 22 and 23.

"Tipping" Gooseberry Bushes.—At the annual general meeting of the Maidstone and Mid-Kent Farmers' Club, held at the Queen's Head, Maidstone, on the 6th inst., the consensus of opinion of the meeting was against tipping gooseberry bushes to prevent the spread of American gooseberry mildew, and a resolution was carried unanimously in opposition to it. The resolution will be sent to the Board of Agriculture through the National Fruit Growers' Federation, and to the Kent County Council.

Appointments from Kew.—Mr. J. Gilbert Watson, formerly a member of the gardening staff of the Royal Botanic Gardens, has been appointed by the Secretary of State for the Colonies, on the recommendation of Kew, an Assistant Superintendent of Government Plantations in the Federated Malay States. Mr. G. E. Williams, an employee in the Royal Botanic Gardens, Kew, has been appointed to the post of Working Forester in the East Africa Protectorate.

Flora of the Malayan Peninsula.—Less than six months ago we noticed (*Gardeners' Chronicle*, September 28, 1912), the 22nd part of the "Materials for a Flora of the Malayan Peninsula," commenced by the late Sir George King and continued by J. S. Gamble, F.R.S. In that notice we unintentionally under-formed flowers, and represented not only first-class cultivation, but a choice strain. Mr. Camm states that the plants—about 200—were raised from seeds sown in August, 1911, and the plants have flowered well since November last.



Photograph by R. A. Malby

Fig. 86. Androsace primuloides; colour of flowers, carmine.

(See page 188.)

Remarkable Cyclamens.—From Mr. W. Camm, gardener to Mr. Waldorf Astor, M.P., Cliveden, Buckinghamshire, we have received two plants of white-flowered Cyclamen. Each specimen bore about two dozen very large, finely estimated the part taken by the latter in this important work. During the last few years of his life Sir George King was an invalid, incapable of taking any active share in the continuation of his "Materials," and hence his co

adjutor, Mr. Gamble, took up the task practically single-handed, and has laboured incessantly at it ever since; and we now have the 23rd part before us. This part has been wholly elaborated by Mr. Gamble, and contains the Myristiceæ, Monimiaceæ, Thymelæaceæ, Elæagnaceæ, and Santalaceæ; also the genera Gonystylus and Champereia. As previously stated, the relatively recent botanical explorations in the Malay Peninsula have added enormously to our knowledge of the arboreous and shrubby elements of the vegetation. The Myristiceæ is the most important family dealt with in this part. Mr. Gamble has followed Warburg's Monograph in generic limitations, and includes the genera Horsfieldia, 18 species; Gymnanthera, 3 species; Myristica, 11 species; and Knema, 14 species; giving a total of 46 species. Previous to Warburg most botanists had included all the species in Myristica. The distinguishing floral characters of the genera named are taken from the stamens. Most of these Myristiceæ are trees of considerable size, ranging from 60 to 100 feet in height, and occasionally to as much as 150 feet. In our notice of the 22nd part we incidentally mentioned that collectors' notes might possibly include facts of interest worth putting on record, with the descriptions; but we have Mr. Gamble's authority that such is not the case.

Edinburgh Gardeners to Combine.—At a largely attended meeting held recently in Edinburgh it was decided to form a Union of garden and nursery employees in and around Edinburgh. A provisional committee was appointed to draft rules and to further the movement.

Small Holdings and Allotments. — Mr. Runciman has published the following details of the working of the Small Holdings and Allotments Act, 1908:—Land acquired or to be acquired to December 31, 1912, 157,063 acres; applications received, 40,842 individuals and 82 associations. Applications approved, 22,789 individuals and 51 associations. Number of small holdings provided, 10,192.

Sulphur as an "Artificial Manure."—The use of sulphur as a soil steriliser has been referred to on several occasions in these pages. Recent experiments with sulphur devised by Mr. Magnien (*Journal de la Soc. d'Hortic. de France*, January 1910) appear to show that a dressing of 2 grams per square metre produces a markedly favourable effect on the growth of Radishes. The sulphur was strewn broadcast and then dug in before seed was sown. The plants in the sulphured area were more vigorous, darker green and freer from pests than those in the unsulphured outside area. Similar beneficial results are described by Mr. Magnien in the case of Beet. For this crop the ground was prepared in April, when drills were drawn for the subsequent sowing. Sulphur was dusted in the rows at the rate of 2 to 3 grams per metre of length. The seed was then sown and earth drawn over by the rake. The sulphured rows realised double the crop produced in the untreated rows.

Senecio Ghiesbreghtii. — A note in *Die Gartenwelt* draws attention to this little-known Mexican, winter-flowering shrub. It reaches a height of 2 metres, and bears heads of bright golden-coloured flowers at the tips of the branches. It does well in a warm house, and may be stood out in summer in a sheltered spot. This Senecio is increased by seed or cuttings, and grows well in rich loam.

Belgian Grapes.—Grape growing is increasing rapidly in the neighbourhood of Brussels, particularly at Hoeylaert, Overyssche and Le Hulpe. Established at the first-named 50 years ago, Grape cultivation is carried on in these three places in 15,000 houses, and realises about 8 million pounds of fruit per annum. The houses are generally 20 by 8 metres. Frankenthal, Gros Colman, Black Alicante, Queen Victoria, Foster's White Seedling, Le Gros Doré and Muscat of Alexandria are the varieties which are most cultivated, Gros Colman being the variety grown most for export. Great Britain receives considerably more than half the grapes exported from Belgium. According to the *Revue d'Horticulture Belge*, the quantity exported has increased from 238,000 kilos in 1900 to 740,000 kilos in 1911. Of the latter amount Great Britain takes 440,000 kilos, the value of which is some 898,000 francs, that is, about a franc a pound.

Chlorosis in Plants.—An interesting contribution to the understanding of the origin of chlorosis of plants has been made by Messrs. P. Mazé, Rust and Lemoigue (summarised in *Agricultural News* of West Indies, February 1, 1913). Vicia narbonensis, grown in nutrient solution, became chlorotic on the addition of small quantities of calcium carbonate. The green colour was restored to the chlorotic leaves by painting their surfaces with a dilute solution of nitrate of iron. The explanation of this form of chlorosis is as follows:—In the presence of calcium carbonate the iron present in the culture solution becomes insoluble, and cannot be absorbed by the plant. In other instances chlorosis is due to lack of sulphur, which lack is attributable to the precipitation of the sulphur in calcareous soils in the form of insoluble calcium sulphate. The observations should suggest a useful line of experimentation in the case of the yellowing of Ericaceous plants, Rhododendrons, etc., which occurs in soils rich in lime.

L.C.C. Parks Committee. — It is proposed that the Parks and Open Spaces Committee of the London County Council during the coming year shall consist of the following members:—T. Chapman, Lord Cheylesmore, Col. R. J. Cooper, H. E. A. Cotton, F. L. Dove, C. U. Fisher, A. O. Goodrich, H. J. Greenwood, Lord Haddo, G. M. Hilbery, T. F. Hobson, T. Hunter, St. John Hutchinson, G. W. H. Jones, Major H. B. Lewis-Barned, Henry Mills, G. K. Naylor, Walter Reynolds, Stuart Sankey, Montague Shearman, W. J. Squires, S. J. Thomas, W. J. West, T. W. Wickham, C. Wilkinson, and Lord Windsor.

Societe Francaise d'Horticulture de Londres.—The anniversary dinner of this Society will take place on Saturday, April 26, at the Café Royale, Regent Street. Mr. Peter Rudolph Barr will preside.

ANDROSACE.

The Himalayas are the home of a group of allied forms of Androsace known collectively as A. sarmentosa. The plants are found in rocky pastures extending from Sikkim to Kashmir, at elevations of from 11,000 feet to 14,000 feet. Some of the forms approach the well known A. lanuginosa, but A. sarmentosa is less silky than that species, and has larger rosettes of broader leaves; it also produces stolons, which root as they spread, soon forming large carpets. The plant grown in gardens as A. sarmentosa (called "A. s. var Watkinsii," in *The Flora of British India*), is a strong-growing plant with large rosettes of silky leaves. The flower stems, about five inches high, appear in April and bear umbels of deep lilac-coloured flowers, which have paler eyes. It is one of the easiest of the set to cultivate, and will grow freely in a sunny situation, provided the soil is well drained. Besides those mentioned, other forms in cultivation are:—

A. Chumbyi, which is considered to be a hybrid between A. sarmentosa and A. villosa. The plant grows in the Chumbi Valley, and is more compact in habit, with smaller rosettes, and flowers stems, the latter not more than 2-3 inches high. The deep rose-coloured flowers are very attractive and freely produced. A. Chumbyi var. Brilliant has richer coloured flowers than the type.

A. foliosa is the most vigorous plant of these allied forms, having thick, stoloniferous, prostrate stems. The broad, obovate, glabrous leaves, ciliated at the base, are somewhat like Daisy leaves and become coloured in the autumn. The flowers are large, pink or tinged with lilac, and are borne in umbels on stems 8 inches or more high from May to September.

A. primuloides (see fig. 86).—This is the form of A. sarmentosa, which is found in Kumaon, at an elevation of 12,000 feet. The rosettes of silkily villous leaves are very compact in habit, while the usual stolons common to this set are mostly absent. The plant, with its bright carmine flowers, is very similar to A. Chumbyi.

All these species of Androsace may be grown on a rocky ledge in full sunshine, and should be planted in light, sandy loam mixed with plenty of stones or gritty soil. They are easy to establish and soon make large clumps. In winter, owing to the silky nature of the foliage, the plants are liable to become injured by damp, and it is advisable to shelter them from rains with a sheet of glass.

A. glacialis (see fig. 85).—This species is quite distinct from those enumerated above. It is one of the most brilliant of the high Alpine plants, and grows wild in beautiful little cushions that in the flowering season are completely covered with a veil of pink blossoms. It is found on the high granitic Alps at an altitude of between 7,000 feet and 10,000 feet in the fissures of rocks, heaps of stony *débris*, and on the edges of glacial moraines. The plant illustrated was growing on the Gruben Alp, above the Turtmann Valley, in the Valais, in very rough rocky ground, at an elevation of 9,000 feet. It was early in the season when the photograph was taken, and the plant had not reached its full beauty. In habit it is dwarf and turf-like, forming close cushions of innumerable shoots that are closely packed together and covered thickly with pubescent hairs. At the extremity of each shoot arises a solitary sessile flower of a more or less bright rose colour. The blossoms are produced so thickly that they obscure the foliage and make beautiful patches of colour on the mountain slopes. The cultivation of the plant in this country is attended with some difficulty, especially in localities of low elevation, but it may be grown with partial success in well-drained gritty soil consisting chiefly of granite chippings or sandstone, to which has been added a little humus. In the winter, owing to the woolly character of the foliage, a sheet of glass should be placed in position to ward off rains.

A. glacialis belongs to a section of the genus known as Aretia, a set of ten charming Alpine plants, all native of Europe. *W. I.*

EUSTOMA RUSSELLIANUM AND CHLORA GRANDIFLORA.

Eustoma Russellianum, which was formerly known as Lisianthus Russelianus, provides an excellent subject for pot culture. The seeds should not be sown too early in the season or the young plants will flower before they have made strong specimens, and the blossoms will be inferior. Neither must the sowing be delayed too long, or the rosettes will not grow sufficiently strong to enable the plants to send up robust flowering shoots. In the Cambridge Botanic Garden, E. Russellianum has been found a very beautiful plant for conservatory decoration, and when not in the conservatory it has been grown in an intermediate pit. The soil used is a mixture of peat and loam. We grow three plants in a small pot, and shift them later into a 6-inch pot. The species is native of Texas and Mexico, and was illustrated in the *Gardeners' Chronicle*, July 21, 1906, p. 55.

Chlora grandiflora is another beautiful plant that requires the same treatment in sowing as Eustoma, so that strong rosettes are formed before winter, to flower the following year. It is a variety of C. perfoliata, which grows on chalk hills in this country. The flowers are of

a golden colour, and large in size—indeed, there is no other plant of the same colour that makes a finer show in spring and early summer. Our seeds were obtained from a Continental nursery, but I find that the firm does not list the plant now. *R. Irwin Lynch.*

PUYA CHILENSIS.

The plant of this gigantic Bromeliad, illustrated in *Gardeners' Chronicle*, Nov. 26, 1910, p. 390, is throwing up a strong flower stem. The spike is about 6½ ft. high from the ground, and at about 1 ft. from the top the diameter is not less than three inches. The swollen, almost club-headed apex is clothed with leafy bracts, indicating the future panicle, which does not yet show signs of branching. The inflorescence was first observed on February 5, and since that date it has been growing in height, on an average, at the rate of about 3 ins. each week. When the plant was illustrated in the *Gardeners' Chronicle* the head of leaves was 6 ft. high and 6 ft. through, and showed some evidence of branching. After the manner of most rosette-forming plants it was expected to flower before branching took place, but this did not happen. It was something of a surprise to find, about a month ago, that an enormously strong scape had pushed through a pane of glass in the light that had been placed over the plant for protection. There are now five well-formed side branches, which before long will occupy all the space between the Orchid and Succulent Houses, a width of 9 ft. With the glass overhead, these two Houses and the Corridor at the back have given all the protection the plant has had, except that mats have been hung in front during severe weather. I do not think that this plant has ever been grown elsewhere out-of-doors in the British Isles, except at Tresco, in the Isles of Scilly, but I should be glad of information. At Tresco a mass of the plant growing, if I remember rightly, in an angle formed by walls, has been a feature of that remarkable garden for many years, and it is to its owner that Cambridge is indebted for a plant. The inflorescence, it will be remembered, was exhibited last year from Tresco at the Royal International Horticultural Exhibition, and those who saw it may recall an immense panicle of greenish-yellow flowers with petals 2 inches long. From the same garden, too, it has been exhibited on one or more occasions at the Temple flower shows. In 1853 a specimen presented by Mr. A. B. Lambert flowered in a cool stove of the Royal Botanic Gardens, Kew; the species was illustrated in *The Botanical Magazine*, tab. 1745. In the North Gallery at Kew there is a life-size painting of the plant. Puya chilensis is a native of the northern province of Chili, where the large spines of the leaves are used for fish-hooks, and the stem for the making of corks and bungs. Some seven species of Bromeliaceae have been found to succeed under "Warm Corner" treatment at Cambridge, but only Dyckia remotiflora flowers freely. *R. Irwin Lynch, Botanic Gardens, Cambridge.*

HEREDITY AND MUTATION.

LECTURE IV.

In the fourth lecture delivered by Dr. Gates at the Imperial College of Science the mutations from Oenothera Lamarckiana were compared with a parallel series obtained from cultures of a certain race of O. biennis which had probably undergone crossing in gardens. Illustrations of a number of Oenotheras derived from culture from the sandhills of Lancashire showed that these included not only O. Lamarckiana and its mutants as previously known, but also O. grandiflora and a host of other forms which were partly of hybrid origin. These included several different types of dwarfs.

In discussing the causes of mutations, it was pointed out that two different cases must be considered separately: (1) mutations occurring in open-pollinated species, and (2) mutations occurring in self-pollinating species. In the former case crossing between races is continually taking place, while in the latter the evolutionary unit is the "pure line."

Mutation in the Oenotheras is a symptom of germinal instability, which instability is partly made evident by the chromosome behaviour, and has probably resulted from crossing of races in the ancestry.

From the consideration of many lines of evidence it is obvious (1) that the mutations do not result from Mendelian hybrid-splitting, and (2) that any explanation must take into account the cytological facts. This is shown, for instance, by the structure and behaviour of such mutants as Oenothera lata (15 chromosomes), O. gigas (28 chromosomes); and by the triploid mutants (21 chromosomes) discovered last year by Stomps and Miss Lutz.

Apart from those which occur in the Oenotheras mutations are known to occur in every branch of the plant kingdom from Bacteria to Phanerogams, and among animals from Protozoa to man himself. A recently published case of the sudden origin of spotting as a dominant character in a family of negroes was described, the spotted condition being dominant to pure black and the original mutation probably heterozygous.

Kofoid found in Ceratium, one of the Dinoflagellates, obtained from plankton off the Galapagos archipelago, two cases which he believed to be mutations. In one of these cases a single chain of individuals derived from the fission of one originally, contained C. tripos at one end of the chain and C. Californiense at the other. In such cases, as well as in the Bacteria, where numerous mutations have been described by Wolf, Beijerinck, Müller and others, they, of course, occur associated with an exclusively asexual method of reproduction.

The investigations of Fräulein Schiemann with the mould Aspergillus niger showed recently that while under normal conditions of culture it gave 0.56 per cent. of mutations, this percentage could be increased to 2 by various modifications of the environment, as, for example, the addition of small quantities of potassium bichromate and other substances, as well as subjection to high temperatures. Forms were thus obtained differing not only in colour, but also in habit (A. fuscus, A. cinnamomeus, A. proteus, etc.). The same mutations could in some cases be obtained either by the action of high temperature or by the effect of chemical stimulants.

Other cases of mutations described included the so-called "cretin" Sweet Pea obtained by Bateson and Punnett in 1907 from a normal race, and the "fern-leaved" variety of Primula sinensis, which originated in English horticulture about 1860, doubtless as a mutation or sport.

Helianthus coronatus described by Cockerell originated from a single plant among huge fields of *H. annuus*, the common Sunflower of Colorado. It differs from its parent in having quantities of red pigment in its flower heads and rays. This is a dominant character, and the original mutation was heterozygous, thus forming a complete parallel to the case of Oenothera rubricalyx.

Zea mays tunicata, the podded maize, is a mutation which behaves as a fully dominant character, and probably represents an ancestral condition. Several dwarf mutations in Maize and a number of bud mutations in Potatos and in Maize were referred to, as well as cases of mutations in animals.

Faking Vanilla Pods.—We recently referred (*Gard. Chron.*, Feb. 22, p. 121), to the danger that might arise from the use of carbolic acid or phenol, in place of clove oil, in the production of artificial vanillin for food flavouring purposes. We now learn that a large proportion of this season's crop of Bourbon and similar descriptions of vanilla has arrived at Marseilles in a badly cured, mouldy, and insect-infested condition, and that the whole has been practically bought up by French dealers, who cleverly repair, and artificially crystallise, the vanilla, and thus are able to dispose of it at very low prices. It is pointed out that the usual care and discrimination exercised by buyers need to be doubled in such cases, and a warranty insisted upon.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

Training of Peach Trees (see p. 145).—Anything that Mr. William Taylor has to say on horticultural matters is worthy of due consideration, and no view that he has hitherto advocated deserves more serious consideration than that which is expressed in his article on the training of Peach trees. I may at once state that the "fish-bone" method of training Peach trees advocated by Mr. Taylor is not likely to find favour with all practical fruit growers. No system of training other than the fan-shape is suitable for the training of the Peach, and I may add Morello Cherry-trees, consisting as they do of an abundance of small branches and branchlets, all of which have to be manipulated and trained at proper distances from one another, and radiating at the right angle from the centre of the trees. The skilful fruit-trainer sees in his mind's eye the completion of a perfectly-trained, fan-shaped tree before he begins the work, and proceeds therewith accordingly. A perusal of Mr. Taylor's article shows clearly that he is in favour of the fan-shaped system of training of Peach trees where skill and labour are available to do the work properly, and without these requirements, Peach growing should not be attempted. Mr. Taylor recommends the planting of young Peach trees at 3 feet apart against walls or for training up to trellises under glass "fish-bone" fashion, which, we are informed, will furnish a wall 10 or 12 feet high with bearing wood within three years from the time of planting. What would become of the "fish-boned" trained trees after five or six years growth for want of wall or trellis space for branch development, seeing that the growths could only extend 18 inches on either side of the upright parent stem? They would become stunted, barren Peach cordons, notwithstanding the numerous good points of adaptability to circumstances which Mr. Taylor puts forward on their behalf. The trees planted in double line across the borders of ¾-span houses at Wilton cannot be said to be trained "fish-bone" fashion; they are simply trained in accordance with the trellis shape and space, and with satisfactory results. A good length of wall—a continuation of the Apricot wall—was formerly, and may still be, furnished with good examples of fan-trained Peach trees. At Longford Castle gardens, fan-trained Peaches have been grown extensively and well, during the past forty years. These trees, furnished from base to summit with healthy, fruit-bearing wood, bear fine crops of fruit every year. Mr. Taylor says that it takes ten years for a fan-shaped Peach tree to become fully developed from the time of planting. This might be true before the extension system of training came into vogue. By following the extension method of procedure, a wall or trellis space of 12 by 15 feet may be covered with fruit-bearing wood within five years from the time of planting under expert supervision. Mr. Taylor states that the system of fan-training is difficult to teach, because the ideal aimed at is unattainable; yet further down in his excellent article he says the fan-trained trees at Longford Castle are as good as it is possible to see, which no doubt is the case. *H. W. Ward.*

Culture of Cyclamen (see pp. 130, 172).—I read with interest Mr. Wyndham Fitzherbert's note on this subject, and, whilst agreeing with him on many details, I am of the opinion that twenty months is too long a time from seed-sowing to flowering, as the plants may be had in bloom in from twelve to fifteen months from the time of sowing the seed. My experience of several years is that the third week in August is a suitable time to sow Cyclamen seed, in a temperature of 55° to 60°. The seedlings should be wintered in the seed-pans, or boxes, on a shelf near to the roof-glass. In the February following, the plants should be shifted into 2½-inch pots, still placing them close to the glass. They will be ready for the next shift to pots of a size larger at the end of March or the beginning of April. At this stage they should be stood on a bed of ashes or gravel, and afforded the same temperature as stated above, damping them by means of a syringe two or three times each day

The final potting should take place in the first week of June. By that time the corms will be a good size, and the pots filled with roots. The pots for this shift should be 5 inches in diameter for the smaller, and 6 inches for the larger and stronger plants. They should then be stood in a frame on a partly-spent hotbed, plunging the pots half their depth in the material, placing a piece of slate or crock under each pot, or making a hole with an iron bar directly under the centre of each plant to prevent worms from clogging the drainage. The frame should be kept close for ten days, the plants syringed twice daily, and shaded lightly. I prefer light tiffany to whitening the glass, as this can be removed each evening. Later, air should be admitted, until, when the plants are established, the lights may be removed at night, say, from August until the middle of September, as heavy dews are very beneficial to growth. All flowers should be removed until the middle of September, and the plants housed at the end of that month, placing them on a bed of ashes or gravel as close to the roof-glass as possible in a temperature of 45° to 50°. They will commence to bloom in October, when 5° increase in the temperature will be beneficial. It is my practice to mix artificial manure in warm water, and soak the plants in this as they are being housed. I quite agree with the compost recommended by Mr. Fitzherbert, with the exception that I add a little bone-meal at the final potting, and I do not advise the use of soot water or liquid cow-manure while the plants are young. Good plants may be had in bloom in December if the seed is sown the previous January and strict attention given to cultural details. *James Page, Sweden.*

NATIONAL DIPLOMA IN HORTICULTURE.—The Committee appointed by the Royal Horticultural Society, in co-operation with the Board of Agriculture, Horticulture, and Fisheries, met for the first time on Thursday, March 13. A question at once arose, "What is Horticulture?" which was answered as follows:—"Horticulture is a definite craft of itself, and not a Department of Agriculture. Horticulture as differentiated from Agriculture includes the more intensive cultivation (as usually practised in gardens), of fruit, vegetables, flowers, shrubs, and ornamental trees." The Committee formulated the following statements:—1. "In view of the acknowledged demand on the part of horticulturists for an official recognition of professional ability, the Royal Horticultural Society, acting in co-operation with the Board of Agriculture, has decided to establish a National Diploma in Horticulture, and a jointly appointed committee has been asked to formulate a scheme." 2. "Among those for whose benefit the diploma is established are the following (in alphabetical order): Florists, fruit-growers, gardeners, horticultural inspectors, horticultural instructors, market gardeners, nurserymen, public park gardeners, and seedsmen." 3. "The diploma will be available for men and women on equal terms." Information as to the qualification of candidates, the method of examination, and the subjects of the syllabus will be published as soon as determined upon. Prospective candidates are requested not to make enquiries of the Secretary until such further publication has taken place. *W. Wilks, Secretary, R.H.S.*

PHYLLOXERA.—In the article on page 161 the writer states that Phylloxera has been reported to him from two sources in England. Is there any reliable evidence on this point? I am asking the question, as I am afraid this article is calculated to do very serious mischief by spreading the idea on the Continent that the Phylloxera is still common in this country. We have been trying for years to obtain some mitigation of the absurd regulations adopted by all the countries in the Berne Convention, which have been largely the means of preventing any trade between nurserymen in this country and on the Continent. We have stated on several occasions that the Phylloxera is practically unknown here, but the article referred to will, I am afraid, give rise to a very contrary impression, and will probably have the effect of delaying reform indefinitely. *Chas. E. Pearson.*

[As our correspondent shows, Phylloxera is of such rare occurrence in this country as to render restrictive measures against the export of nursery stock unnecessary and absurd. At the same time nothing but evil would result from an attempt to show that no case of Phylloxera has ever been known in this country. The demonstration of the extraordinary rarity of this pest is a better guarantee of our nurserymen's interests than any extravagant asseveration of an absolute immunity of this country from Phylloxera.—EDS.]

VOLES AND HOLLY TREES.—(See page 172.) Considerable trouble and annoyance have been caused here by the attacks of, presumably, voles on our Hollies. This has occurred mostly in the woods, and many fine bushes are showing signs of distress in consequence. Occasionally a bough has completely died and has had to be cut away. The mice seem to have attacked the boughs only, removing the bark entirely, both on the main stems and also towards the outsides of the bushes, to a height of fully six or seven feet. The marks of the animals' teeth are plainly visible, and many of the bushes will need to be cut back severely. *Edwin Beckett, Aldenham House Gardens, Elstree.*

EXPERIMENTS IN THE POLLINATION OF HARDY FRUIT BLOSSOMS.—We are endeavouring to find the best "pollenisers" for different kinds of market fruits, with the object, of ascertaining which varieties would be best to interplant, and shall be glad if readers will make trials in cross-pollination on any of the following varieties:—(Apples) Grenadier, Lord Derby, Lane's Prince Albert, Bramley's Seedling, Beauty of Bath, Gladstone, James Grieve, Allington Pippin, Worcester Pearmain, Cox's Orange Pippin, Early Victoria, and Newton Wonder. (Pears) Clapps' Favourite, Conference, Dr. Jules Guyot, Fertility, Souvenir du Congrès, Doyenné du Comice, and Pitmaston Duchess. (Plums) Czar, Monarch, Rivers' Early Prolific, Pershore, and Ponds' Seedling. (Cherries) Rivers' Early Black, Bigarreau Napoléon, Amber Bigarreau, Waterloo, and Morello. We also require information on the insects that visit the various fruit blossoms and the proportion of each. If observations and results of experiments are forwarded to me I will summarise the results. *Cecil H. Hooper, Wye, Kent.*

MAZUS RUGOSUS.—With reference to note on p. 158 respecting Mazus rugosus, for which we were granted an Award of Merit at the Royal Horticultural Society's meeting on March 4, we send you the following particulars respecting the plant, as there appears to be some doubt existing as to whether it is a perennial. The plant originally came from the Himalayas, and spreads by means of procumbent stems which root as they grow and produce flowers one inch in height. The fact that each rooted stem had a flower when exhibited seems to have given the impression that it was a pan of seedlings; when established it literally covers itself with flowers during the early spring months, also producing a few solitary flowers during the summer, which are of a deep mauve colour freely spotted with orange on a white ground. The plant is undoubtedly perennial. *Johnson's Gardening Dictionary* (1868) describes both M. rugosus and M. Pumilio as hardy annuals, but there can be no doubt that this description is erroneous. Respecting M. Pumilio, this is quite a distinct plant; it produces slender underground rhizomes, and the leaves are spathulate with slightly waved edges, which are about 1 inch long, and only produces its flowers during the summer months, whereas M. rugosus, as we have before stated, flowers during the early spring and summer months. *B. Crisp* [*The Wargrave Plant Farm, Limited.*]

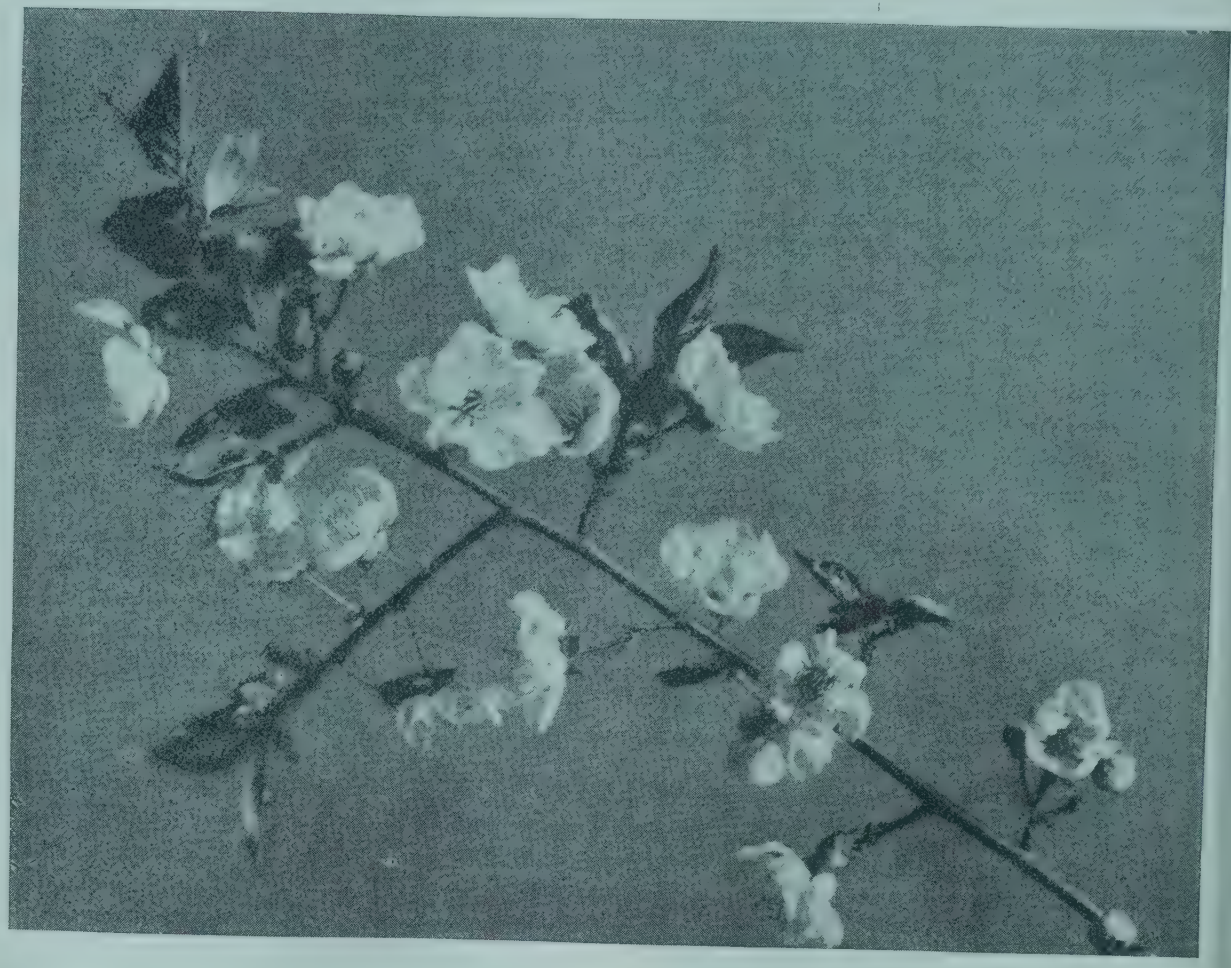


FIG. 87. FINE SEMI-DOUBLE, PINK VARIETY OF PRUNUS CERASIFERA, FLOWERS ONE INCH IN DIAMETER.

PRUNUS CERASIFERA ATROPURPUREA MOSERI FL. PL.

IT would be a difficult matter to determine the best of the flowering Cherries, comprising as they do so many beautiful varieties, but the subject of this note (see Fig. 87) is certainly one of the best and one of the earliest to flower. It is an improved variety of the well-known Prunus Pissardii or P. cerasifera, and comes into flower just as that well-known purple form of the Myrobalan is going over. We obtained the plant some five years ago from the Continent, and it has now developed into a fine young tree which flowers abundantly every season. As the name implies, it is a double form, or at least semi-double. The cup-shaped flowers exceed one inch in diameter, and are a most pleasing shade of pink. They last in flower a long time, both in a cut state when placed in water, and on the tree.

To those who admire early flowering trees and do not yet possess this variety, I confidently recommend it as a grand acquisition. *E. Beckett, Aldenham House Gardens, Elstree.*

FLORISTS' FLOWERS.

ANTIRRHINUMS.

Of the value of the above plants for various schemes of garden decoration there cannot now be any doubt. During the last few years all sections of them have been much improved, and I believe I am right in saying that they are almost as popular as the Sweet Pea. The improvements in both have gone on with rapid strides, and yet there is no doubt that much remains to be done. It is not many years ago since we had a very limited choice of colours in Antirrhinums. All this is now changed; both in the tall and in the intermediate varieties there is a wide choice, ranging from pure white to deep crimson, and including yellow, orange, coral-red, scarlet and pink. There are not quite so many colours in the dwarf or Tom Thumb varieties, although these may be had in white, yellow, crimson and rose, and others will, no doubt, soon be forthcoming. Although really hardy perennials, they may be sown early in the year and used as annuals. They make a grand display during the summer and autumn. Seed should be sown in well-drained pans in any light, finely-sifted soil, during the latter part of January, or early in February. As the seed is very fine it is best to soak the pans in tepid water so as thoroughly to moisten the soil. Watering overhead should be avoided, or the seed may be washed down the side of the pans. Just cover the seeds with very fine soil or sand, and place a piece of glass or paper over them to prevent evaporation. Stand the pans in a vinery or peach house, or in any house or frame with a temperature of 50° or 55°. The young seedlings will soon make an appearance, and when they are large enough to handle, prick them off into boxes, preferably about 2 feet long, 1 foot wide, and 4 inches deep, placing them about 2 inches apart. The soil need not be too fine, and the boxes should be well drained. Label each variety as it is finished, and put back into the same house until established. Water carefully, and after a time remove the seedlings to a cold frame, protecting them carefully from frost. Every effort should be made to keep them sturdy, removing the frame-light on warm days, and admitting a little air at night. When the young plants become stronger, and the danger of sharp frost is over, remove them outside to a skeleton frame, throwing a mat over them at night by way of safeguard. The site they are to occupy will have been decided upon before this, and the ground should be well dug and manured. A light dressing of soot will help to bring out the colours of the flowers. There is no doubt that Antirrhinums are most effective grown in masses, and not dotted about. Even when grown in the hardy flower border they should be given a prominent position, and planted in as large patches as possible. They are all useful in summer bedding schemes, and the intermediate and dwarf sections make a fine groundwork for the taller ones, especially if the colours are carefully chosen. Given good soil and position, these latter will reach a height of 4 or 5 feet. To prevent them from being blown about, each plant should have one stake, and the centre, or main spike, should be tied neatly to it. The side shoots should be lightly looped up. Both the tall and intermediate varieties make good cut flowers and last a considerable time in water. The dwarf varieties make fine edgings to beds and borders, and are exceptionally free in flowering. The seeds for early summer-flowering Antirrhinums may be sown in August or September, and the young plants wintered in cold frames and planted out in April. The spring-sown plants will follow these in flowering. Cut the flowers as soon as they fade, and do not allow them to drop the seed on the border, or the colour scheme may be marred by self-sown plants. The seed of any variety may be saved if the pods are gathered before they open and placed in the sun to ripen, but there is really no need for this, as the seed of the best varieties is now sold very cheaply.

R. W. Thatcher.

SOCIETIES.

ROYAL HORTICULTURAL.

March 18.—There was a large attendance at the fortnightly meeting and exhibition of the Royal Horticultural Society, which was held at Vincent Square on the above date. Forced shrubs were again a pleasing feature of the show, and Daffodils were also of great merit.

The Orchid Committee recommended awards, including one First-Class Certificate and four Awards of Merit.

The Floral Committee awarded 25 Medals, one First-Class Certificate, and one Award of Merit to Collections and Novelties.

The Fruit and Vegetable Committee awarded two Medals to exhibits of imported Fruits and forced Vegetables.

At the 3 p.m. meeting of Fellows in the Lecture Hall, Mr. R. Lloyd Praeger, B.E.B.A., M.R.I.A., delivered a lecture on "The Romance of Weeds."

Floral Committee.

Present: Henry B. May, Esq. (in the Chair); Messrs. W. A. Bilney, W. Cuthbertson, G. Reuthe, Thos. Stevenson, C. R. Fielder, J. F. McLeod, J. W. Moorman, John Dickson, Chas. Dixon, Arthur Turner, Chas. E. Pearson, Chas. E. Shea, George Paul, W. P. Thomson, W. G. Baker, Wm. J. James, Chas. T. Druery, John Green, W. J. Bean, R. C. Notcutt, James Hudson, J. W. Barr, A. Watkins, John Jennings, and Capt. A. A. Dorrien Smith.

Messrs. James Veitch & Sons, Ltd., Chelsea, showed a large collection of the Cinerarias we admired at the previous meeting. On the present occasion the exhibit was of greater magnitude, and the plants were models of high cultivation. A Silver-gilt Flora Medal was awarded to Messrs. Veitch for this and their collection of forced shrubs.

Mr. H. Burnett, Guernsey, set up an imposing array of splendid Carnations, the blooms, borne on long, stout stalks, were boldly yet tastefully arranged. (Silver Flora Medal.)

Messrs. Stuart Low & Co., Bush Hill Park, Enfield, arranged a very tasteful group of Acacias, Carnations, Cyclamen, etc. (Silver Banksian Medal.)

Messrs. Allwood Bros., Wivelsfield Nurseries, Haywards Heath, showed such good varieties of Carnation as Mary Allwood, Wivelsfield Wonder, Rosette, and Mrs. C. W. Ward, in excellent condition. (Bronze Banksian Medal.)

Messrs. Young & Co., Hatherley, Cheltenham, arranged very fine cut Carnation blooms of fresh and distinct colourings. Duchess, Baroness de Brienen, and Hon. J. Boscawen are the names of only a few of the varieties so well shown. (Bronze Banksian Medal.)

Messrs. Wm. Cuthbert & Son, Highgate, London, displayed exceedingly good Carnation blooms at the end of their exhibit of forced shrubs and Alpines.

Messrs. W. Wells & Co., Merstham, Mr. A. F. Dutton, Iver, Bucks, and Mr. C. Engelmann, Saffron Walden (Bronze Banksian Medal), also exhibited collections of cut Carnations.

Mr. R. A'E. Day, Scutton Scotney, again displayed cut blooms of his excellent Spanish Irises. (Silver Banksian Medal.)

Messrs. Reamsbottom & Co., Geashill, King's County, Ireland, exhibited excellent cut blooms of St. Brigid Anemones cut from the open border. (Bronze Banksian Medal.)

Messrs. H. Cannell & Sons, Swanley, Kent, had a brilliant array of cut trusses of Zonal Pelargoniums. It is difficult to imagine a finer collection of these flowers than that under notice. The "pips" which composed the large trusses were individually very large, and of rich colours. (Silver Flora Medal.)

Messrs. H. B. May & Sons, Upper Edmonton, displayed many well-flowered Clematis amongst their exhibit of stove and greenhouse Ferns. The Clematises were arranged in colour blocks and included such varieties as Lord Wolseley, Miss Bateman, and Marcel Moser. (Silver Banksian Medal.)

Messrs. Wills & Segar, Onslow Crescent, South Kensington, massed a quantity of Azalea indica varieties, Azalea mollis and Hydrangeas which bore large quantities of bloom. These plants were of the type so valued for placing in ornamental vases in living rooms. (Silver Flora Medal.)

Messrs. Jarman & Co., Chard, showed good forms of Cineraria stellata and Zonal Pelargoniums.

Mr. G. Prince, Longworth, Oxford, showed a very good collection of forced Roses. The most successful varieties were Madame A. Chatenay, Mrs. W. J. Grant, Juliet, Lady Ursula, Mrs. Longworth, La France, Lady Roberts, Rayon d'Or, Capt. Haywood, Laurent Carle and Mrs. E. J. Holland. (Silver Flora Medal.)

Messrs. Wm. Paul & Son, Waltham Cross, made a feature of the deliciously scented Rose "Juliet." It is well to know that this new variety forces so well and retains its perfume. Mrs. Chas. Hunter, a deep pink variety, also forces well.

Messrs. Blackmore & Langdon, Tiverton Hill Nursery, Bath, showed bunches of fragrant Violets. The new single variety Askaria bears large, deep-blue flowers. A very fine strain of bedding Polyanthuses was also shown.

The central feature of Messrs. Carter & Co.'s exhibit from Raynes Park was a spring garden with a fountain surrounded by a roughly-paved square in which mosses were growing. The remainder of the exhibit consisted of a narrow terrace filled with golden Daffodils and pink Tulips, and two rich green lawns. (Silver Flora Medal.)

Messrs. Wm. Cutbush & Son, Highgate, London, continue to display especially praiseworthy forced shrubs and Alpines. (Silver Flora Medal.)

Messrs. James Veitch & Sons, Ltd., King's Road, Chelsea, exhibited a very large collection of forced shrubs. The Wistarias, Rhododendrons, Weigelas, Pyruses, Lilacs, etc., were fully equal to shrubs which are grown undisturbed in the garden. A large group of Rhododendron Pink Pearl was especially effective. (Silver-gilt Flora Medal.)

Chief amongst the collection of Rhododendrons exhibited by Messrs. R. Gill & Sons, Falmouth, was the brilliant variety Cornubia. R. barbatum, R. Harrisii and R. Riviera Beauty are three other very brightly coloured varieties. Besides the Rhododendrons Messrs. Gill showed good healthy plants of the Chatham Island Forget-Me-Not (Myosotidium nobile) and Primula Winteri. (Silver Banksian Medal.)

Mr. L. R. Russell, Richmond Nurseries, Richmond, Surrey, filled a length of tabling with forced shrubs, pot Ivies and Primroses. Amongst the last-named there was an excellent strain of Wilson's Blue. The shrubs included very good Clematis, Daphne Cneorum, and Azalea mollis. (Silver Flora Medal.)

Mr. G. Reuthe, The Fox Hill Nursery, Keston, Kent, arranged two large bushes of Rhododendron ciliatum amongst his interesting collection of uncommon shrubs and rockery plants. There were a good example of Myosotidium nobile, a bunch of the golden Scotch Wallflower, and a splendid clump of Anemone pulsatilla, besides many other desirable plants. (Silver Banksian Medal.)

Mr. Amos Perry, Enfield, Middlesex, showed a dozen fine varieties of Tree Pæony. Elizabeth, Archduke Ludovic and Louis Parmentier are the best of a very fine collection. (Bronze Banksian Medal.)

Messrs. Geo. Jackman & Son, Woking Nurseries, Surrey, displayed Iberis Little Gem, Morisia hypogæa, Leptospermum "Heavenly Blue," and various spring-flowering bulbous plants. (Bronze Banksian Medal.)

In the annexe Messrs. Pipers, Bayswater, London, showed excellent forced specimen double Cherries (pink and white) and tall bamboos. This exhibit participated in the award to the attractive rock garden exhibit.

Mr. G. W. Miller, Clarkson Nurseries, Wisbech, showed a good strain of Primroses and Polyanthuses.

Messrs. Sutton & Sons, Reading, exhibited a very interesting and instructive collection of seedling grasses. The higher level of the exhibit was laid out in the form of a terraced lawn, the slopes being composed of boxes of a very great variety of grasses (Phleum pratense, Festuca duriuscula, Cynosurus cristatus, and others

18 species in all). At the back there were 20 framed herbarium sheets of dried grasses (the whole plant, showing not only the top growth but the distinctive root systems). Artificial manures in glass tubes, the seeds of various grasses, and insects and larvæ of the Chafer Beetle and the Daddy-Long-Legs, which are injurious to the roots of grasses, were also shown in this excellent exhibit. (Silver Banksian Medal.)

Messrs. Pipers, Bishop Road, Bayswater, London, arranged a very convincing Rockery which was beautified with a choice collection of Alpines, such as Ranunculus amplexicaulis, Epimedium niveum album plenum, Saxifraga Kotschyi, S. scardica, Omphalodes cappadocica, Aquilegia glandulosa, and the quaint Sedum rupestre monstrosum. (Silver Banksian Medal.)

Mr. James Box, Lindfield Nurseries, Haywards Heath, Sussex, exhibited in a corner of the hall a pleasantly disposed rockery backed with Rhododendrons, Wistarias, and other flowering shrubs. Amongst the Alpines the dainty little Soldanella minima alba, Primula glaucescens, and the bright rose-coloured Androsace laevigata attracted a deal of admiration. (Silver Banksian Medal.)

Opposite the entrance Messrs. Barr & Sons, Covent Garden, London, built a low rockery in which they displayed various species of Primula, Anemone pulsatilla, Saxifrages, Anemones, and Fritillaria Meleagris.

Mr. Clarence Elliott, Six Hill Nursery, Stevenage, contributed a well-designed, low rockery and dwarf conifers suitable for rock gardening. (Silver Banksian Medal.)

Mr. Maurice Prichard, Christchurch, Hants, displayed floriferous Brooms, varieties of Aubretias, Primulas and other Alpines. (Silver Banksian Medal.)

The Wargrave Plant Farm, Ltd., The Arcade, Liverpool Street, London, displayed Genista hispanica, G. Andreanus, Cydonia Maulei, a new species of Rhododendron from China, bearing large white flowers on a tiny plant, and many Alpines. (Silver Banksian Medal.)

Messrs. W. T. Ware, Ltd., Feltham, Middlesex, built a rockery and displayed various shrubs and Alpine plants; a sweep of Gentiana acaulis encompassed by Calthe palustris fl. pl. and Iberis Little Gem was very effective.

Messrs. Whitelegg & Page, Chislehurst, Kent, contributed hardy shrubs and rockery plants.

Messrs. Bunyard & Co., Ltd., Maidstone, Kent, planted a rockery with Magnolia stellata, Prunus triloba fl. pl., various Heaths, and appropriate Alpines.

Mr. H. Hemsley, Crawley, Sussex, showed Alpines and hardy shrubs.

Messrs. G. & A. Clark, Ltd., Dover, exhibited very good Primroses and Polyanthuses, as well as a small selection of Alpines.

Messrs. Thompson & Charman, Adelphi, London, displayed Daphne Cneorum, Pieris floribunda, Primula denticulata, P. rosea, and other Alpine plants.

Messrs. R. Tucker & Sons, 38, George Street, Oxford; the Misses Hopkins, The Mere Gardens, Shepperton-on-Thames; The Burton Hardy Plant Nurseries, Christchurch; the Guildford Hardy Plant Co., Guildford, Surrey; Messrs. John Peed & Son, West Norwood; and Messrs. J. Cheal & Son, Crawley, also exhibited rockery plants.

The Hon. Frances Wolseley, Glynde, Sussex, exhibited a model formal garden.

First-Class Certificate.

Primula Purdomii.—A new species with lilac-mauve flowers in cowslip-like umbels, which was collected at an altitude of 10-11,000ft. at Tao-chau (Tow-chow), in West Kan Su, China. As this is in latitude 35deg. N. and north of the province of Szechuen, whence so many fine things have already been introduced, there is every reason to hope that it will prove hardy. The flowers are borne in umbels of from 3 to 12 on stalks about 6 inches high, and are more or less pendant. Lilac-mauve best suggests the colour, but it is practically identical with the shade of bright violet in the *Répertoire de Couleurs*, and reminds one of Primula Winteri. The flowers are 1 inch in diameter, and have a small greenish-yellow eye. The tube is almost closed, and the anthers are borne above the constriction about half-way up the tube. The leaves are lanceolate, from 3 to 5 inches long by ½ to ¾ in diameter, as shown, tapering to the stalk. Leaves, stem and calyces are covered with a very white farina, which adds considerably to the beauty of the plant. (Shown by Messrs. J. Veitch & Sons.)

Award of Merit.

Omphalodes Cappadocica (shown as O. Cappadocia).—An old perennial species found wild in shady places in Cappadocia, Pontus Lazicus, Abchasia, etc., and referred by *Index Kewensis* to O. cornifolia. The flowers are rich blue, with a small white eye, half an inch in diameter, and rise some 6 or 8 inches from the ground, in loose erect cymes. The leaves are cordate-lanceolate, but a little variable in shape. They have very characteristic sunk arching veins, and the whole leaf-surface is finely covered with silky hairs. (Shown by Mr. M. Prichard.)

Other Novelties.

Rhododendron hypoglaucum is an evergreen species with showy-white flowers, introduced from China through their collector, E. H. Wilson, by Messrs. J. Veitch and Sons. The plant shown was about 15 inches high, and carried three expanded trusses, each with about 10 flowers. The bells are rather open, and have notched segments; the truss is close and handsome. The flowers are white with a small crimson blotch over the gland at the base of the tube. Stigma and anthers are also pure-white, but the chocolate anthers add a pleasing touch of colour. The leaves are dull-green, elliptical, pointed at the tip, and slightly cordate at the base, from 2 to 3 inches long by ¾ to 1 inch broad. (Shown by Messrs. J. Veitch & Sons, Ltd.)

Rhododendron Davidii is a very handsome species also newly-introduced from China by Messrs. J. Veitch. The specimen shown, only 18 inches high, was finely branched and carried some fifteen trusses of expanded flowers. The colour is a bright rose, glossy and a deeper shade on the outside of the bell-shaped corolla. The trusses carried up to twelve flowers, but they were characteristically flat with the flowers more or less in a ring and not furnishing a pyramidal head. The leaves were larger than in the last species, about 4 by 1 inches, slightly rusted below and half glossy above and curved in section.

Prunus glandulosa var. trichostyla is a new variety of P. glandulosa collected in China by E. H. Wilson. The flowers are white, about ¾ inches in diameter, generally solitary on ½ inch pedicels in the axils of last year's leaves, but occasionally in pairs. The disc and filaments suffuse with pink as the flowers age and give a pleasing appearance. The habit is dwarf and wiry, and the growth markedly erect. The young twigs are a glossy purple-brown, and the whole plant seemed quite glabrous. The leaves, which develop with the flowers and are about 1 inch long by ⅓ inch wide, have finely-serrated margins, and bear a pair of linear stipules at the base. (Shown by Miss Ellen Willmott, V.M.H.).

Orchid Committee.

Present: Sir Harry J. Veitch in the Chair, and Messrs. Jas. O'Brien (hon. sec.), Gurney Wilson, R. A. Rolfe, J. Wilson Potter, F. Sander, R. G. Thwaites, F. M. Ogilvie, F. J. Hanbury, T. Armstrong, A. McBean, J. Charlesworth, J. Cypher, W. H. Hatcher, J. E. Shill, H. G. Alexander, A. Dye, W. H. White, S. W. Flory, C. J. Lucas, W. Bolton, J. S. Moss, De B. Crawshay, and Sir Jeremiah Colman, Bart.

Messrs. Armstrong & Brown, Tunbridge Wells, were awarded a Silver Flora Medal for an effective group in the centre of which were fine plants of Cymbidium eburneo-Lowianum concolor, and C. Ballianum, the latter with three spikes of fine white flowers larger than those of C. eburneum. At each end were selections of showy Dendrobiums, including the white D. nobile virginale and various hybrids. With them were arranged some pretty Laelio-Cattleyas, many with yellow flowers with richly coloured labellums; scarlet Odontiodas, hybrid Odontoglossums (some of them closely resembling good blotched forms of O. crispum), Miltonia Bleuana virginale, and some good Brasso-Cattleyas.

Messrs. Sander & Sons, St. Albans, secured a Silver Flora Medal for a good group, in which good forms of Cattleya Schroderæ were well represented. In the centre were several Cymbidium insigne, Odontoglossum Edwardii, and other Odontoglossums, and arranged with them were Brasso-Cattleya Mrs. J. Leemann, two plants of the bright rose B.-C. Siren (C. Skinnerii × B. Digbyana); a selection of Scarlet Odontiodas, etc., interesting plants in the front being well-flowered Trichopilia suavis, Sarcochilus Fitzgeraldii, Masdevallia Pourbaixii, Megaclinium maximum and Vanda cœrulescens.

Messrs. Stuart Low & Co., Bush Hill Park, arranged an effective group, for which a Silver Flora Medal was awarded. Good Cattleya Schroderæ, including a fine plant of the pure white C. S. alba Purity, and a peach blossom, tinted form with fourteen flowers were noted. Also some showy Laelio-Cattleyas and Cattleyas, Brasso-Cattleyas and Dendrobiums.

Messrs. Charlesworth & Co., Haywards Heath, were awarded a Silver Flora Medal for a group of specially well grown plants, including Phaius tuberculosus and P. simulans; the finely coloured Laelio-Cattleya Dominiana Prince of Wales; Cattleya Susannæ Hye de Crom and other Cattleyas; a fine specimen of Eulophiella Elisabethæ, Odontioda Charlesworthii, Odontoglossum eximium of a very fine type, and the white O. ardentissimum xanthotes.

Mr. Sidney Flory, Tracy's Nursery, Twickenham, was awarded a Silver Banksian Medal for an effective group, including some fine yellow Oncidium concolor, two dark claret coloured Odontoglossum Clytie, O. Phocis with prettily-spotted flowers, Cattleya Trinæ alba, C. Schroderæ of good quality, Coelogyne sparsa, Pleurothallis Roezlii, the pretty Eulophia Saundersii, a white form of Odontoglossum Pescatorei, and other Odontoglossums and hybrid Cypripediums.

Messrs. Hassall & Co., Southgate, secured a Silver Banksian Medal for a neat group, including a specimen of their pretty strain of Brasso-Cattleya Menda with a very pretty blush-white flower, two good Angræcum sesquipedale, the one with five flowers; Renanthera Imschootiana, the white-petalled Cattleya Luddemanniana Stanleyi and Odontoglossum Ossulstonii.

Lieut.-Col. Sir Geo. L. Holford, K.C.V.O., Westonbirt (gr. Mr. H. G. Alexander), sent Odontoglossum Griselda, a large, cowslip-yellow hybrid with red-brown blotches in the middles of the broad sepals and petals; Brasso-Laelio-Cattleya Figaro (B.-L. Jessopi × B.-C. Mrs. J. Leemann), yellow with rose markings on the outer parts of the segments; Brasso-Cattleya H. G. Alexander, the remarkable cross between Cattleya citrina and Brassavola Digbyana), with fleshy, fragrant yellow flowers, and which previously received an award of merit, and the fine Cattleya Magnet (see awards).

E. H. Davidson, Esq., Orchid Dene, Twyford, showed Cattleya Suzanne Hye de Crom, Orchid Dene variety, the first break from the white form, the plant shown having rose-tinted flowers with a rose-purple front to the lip; Sophro-Laelio-Cattleya Hon. Barbara Wilson Davidson's variety, and Odontoglossum James O'Brien (Duvivierianum × harvengtense), a remarkable cross resulting in a distinct flower, the squarely-shaped broad labellum being specially effective. The sepals and petals are sulphur yellow with broad red-purple bands, the lip white with a large red band in front of the crest.

De B. Crawshay, Esq., Rosefield, Sevenoaks (gr. Mr. Stables), sent Odontoglossum harvengtense Crawshayanum, a handsome form which had previously gained an Award of Merit. O. Nerissa, O. Solon; a fine rich-red Odontioda Charlesworthii; two O. Bradshawiæ, and the pretty O. Carmen, for which Mr. Crawshay received a Certificate of Appreciation last year.

F. Menteith Ogilvie, Esq., Oxford (gr. Mr. Balmforth) showed Odontioda Red Riding Hood (Rossii × Bradshawiæ), a pretty flower with cinnabar red spotting on the sepals and petals; and two others. (See Awards.)

Pantia Ralli, Esq., Ashtead Park, sent Cattleya Trianæ Empress of India.

Baron Bruno Schroder, The Dell, Englefield Green (gr. Mr. J. E. Shill) showed Cattleya Schroderæ Madame Dina Beaumer, a large white flower with faint lavender tint in the lip.

Mons. Jules Hye de Crom, Ghent, showed Miltonia Hyeana Stella bearing several flower spikes.

Walter Cobb, Esq., Normanhurst, Rusper (gr. Mr. C. J. Salter), showed Odontioda Cooksoniæ The Gem and the fine Odontoglossum crispum Cobb's variety. (See Awards).

H. S. Goodson, Esq., Fairlawn, Putney (gr. Mr. G. E. Day), sent Lælio-Cattleya Charmian (C. Trianæ alba × L. C. Bletchleyensis), a finely shaped white flower with lilac marking in the centre.

Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. Collier), showed cut specimens of forty Dendrobriums, chiefly hybrids.

Mr. E. V. Low, Vale Bridge, Haywards Heath, showed two plants of Lycaste Skinneri alba, a distinct form of Cattleya Schroderæ and a pretty Lælio-Cattleya.

Mr. John Evans, Manor House, Key Green, Congleton, showed a rich, red form of Oncidioda Cooksoniæ.

First-Class Certificate.

Brasso-Cattleya Cliftonii magnifica (*B.-C. Digbyano - Mossiae* × *O. Trianae, Uplands variety*), from F. Menteith Ogilvie, Esq., The Shrubbery, Oxford (gr. Mr. Balmforth). A grand flower and a great improvement on the original form. Sepals and petals broad, bright, rosy-mauve, lip large, the front being coloured deep rose-purple, the margin lighter tinted and fringed.

Award of Merit.

Cattleya Tityus Shrubbery Variety (*C. Enid* ×*C. Octave Doin*) from F. M. Ogilvie, Esq. Nearest to C. Octave Doin, but larger and better in every respect. The sepals and broad crimped petals are blush white; the finely displayed lip being crimson with yellow disc.

Cattleya Magnet (*Mossiae* × *Whitei*) from Lieut.-Col. Sir Geo. L. Holford, K.C.V.O. (gr. Mr. H. G. Alexander). In this finely-coloured hybrid the C. Schilleriana and C. Warneri which were the parents of C. Whitei, can well be traced in the rich rose-purple of the flower and the claret coloured veining of the lip, the whole flower being specially bright and attractive. The plant shown was finely grown and profusely flowered.

Cattleya Trianae alba Souvenir de Louis Verdonck, from Mons. Jules Hye de Crom, Ghent, Belgium. A fine, clear-white variety of large size and good shape.

Odontoglossum crispum Cobb's variety from Walter Cobb, Esq., Rusper (gr. Mr. C. J. Salter). A very fine form of typical O. crispum with large, white flowers, having a brown blotch in each segment.

Cultural Commendation.

To Mr. W. H. White, Orchid grower to Sir Trevor Lawrence, Bart., for large specimens of Odontoglossum pulchellum and varieties of O. Rossii which have been in the Burford Collection for 30 years.

To Messrs. Charlesworth & Co. for Odontioda Bradshawiæ.

Narcissus Committee.

Present: Rev. George Engleheart (in the Chair); Messrs. W. Poupart, F. H. Chapman, G. W. Leak, P. D. Williams, Joseph Jacob, W. A. Watts, Henry Backhouse, Walter T. Ware, J. D. Pearson, Charles Dawson, Alex M. Wilson, F. Barchard, P. Rudolph Barr, H. V. Warrender, W. F. M. Copeland, Christopher Bourne, W. R. Cranfield and C. H. Curtis (hon. sec.).

Messrs. Barr & Sons, Covent Garden, London, had an exhibit entirely composed of cut blooms grown in the open at their Rosemorran Gardens near Penzance, in Cornwall. Most of the flowers shown were unnamed seedlings which included many excellent novelties. The colour of No. 1,985 is quite a new departure. The flower belongs to the Incomparabilis section, and is much like Sir Watkin, and the white perianth sets off the terra-cotta shade of the trumpet, which has a sulphur-yellow margin. No. R. 1,017 is a glorified King Alfred, with all that variety's richness of colour. There were many other fine blooms amongst the large-flowered section. Those with smaller flowers included Little Queen, a Triandrus variety in which the usual order is reversed, the trumpet being pale, whilst the perianth is a rich yellow. (Silver-gilt Flora Medal.)

Messrs. R. and G. Cuthbert, Southgate, exhibited a splendid collection of Tulips in pots. There were 40 of the most suitable varieties for bedding purposes, such old favourites as Keizerskroon, Primrose Queen, Proserpine, Brilliant Star, and Ophir d'Or were included. Altogether this was a very charming exhibit. (Silver-gilt Flora Medal.)

Messrs. Cartwright & Goodwin, Kidderminster, arranged a collection of Daffodils in a very attractive manner. The flowers shown were characterised by freshness and clear colouring, and probably the medio-coronata sections contained the finest flowers of the exhibit. (Silver-gilt Banksian Medal.)

Mr. Christopher Bourne, Simpson, Bletchley, showed Whitewell, Sunrise, Roxana amongst their magno-coronata Daffodils. The trumpet varieties included The Doctor and The Earl, two very desirable sorts. (Silver Banksian Medal.)

The chief feature of the Daffodils arranged by Mr. F. H. Chapman, Rye, was the vivid colouring of the parvi-coronata varieties. Red Lady, Rubicon, and several unnamed seedlings were almost dazzling. As usual the Poetaz varieties were splendid. (Bronze Flora Medal.)

Messrs. Robert Sydenham, Ltd., Tenby Street, Birmingham, arranged a collection of named Daffodils. The variety Orange Disk, which has a brightly coloured eye, was very charming. (Bronze Flora Medal.)

Messrs. R. H. Bath, Ltd., Wisbech, also displayed very good Daffodils. The old favourite, fragrant variety, Queen Anne, attracted a deal of admiration. Besides the Daffodils there were Frittilarias and Tulips growing in bowls of fibre. (Bronze Flora Medal.)

Mr. Alex. M. Wilson, Shovell, Bridgwater, Somerset, displayed a very beautiful group of cut Daffodils. Many of the unnamed seedlings were of surpassing loveliness. Besides the variety Judith, which received an Award of Merit, Robespierre, Dragoon and Whelp, amongst the named sorts, were admirable.

Mr. W. A. Watts, Bronwylfa, St. Asaph, exhibited a small, but choice, collection of Welsh Daffodils.

Award of Merit.

Narcissus Judith. — A fine Leedsii variety with broad, over-lapping white perianth segments of considerable substance and sulphur coloured trumpet of a slightly deeper yellow at the margin, which is richly frilled. The flower is about 3 inches in diameter and the cup an inch in length. It is closely allied to Peregrine, and may be regarded as an improved White Queen. (Shown by Mr. A. M. Wilson, Shovell, Bridgwater.)

Fruit and Vegetable Committee.

Present: Jos. Cheal, Esq. (in the Chair); H. Somers Rivers, W. Humphreys, W. Bates, J. Jacques, F. Perkins, Edwin Beckett, J. Davis, A. Grubb, J. G. Weston, Wm. J. Jeffries, P. C. M. Veitch, Geo. Kelf, A. Bullock, Geo. Wythes, H. Markham, O. Thomas, C. G. A. Nix, and John Harrison.

The excellent collection of Vegetables exhibited by Messrs. Sutton & Sons, Reading, included perfectly shaped, clean Broccoli (Snow White), gigantic Leeks (Prizetaker) and Onions amongst the hardy kinds. In the forced section of the display there were four stands of perfect Cucumbers (Sutton's Market), and crisp-looking Radishes and firm-hearted Lettuce (Golden Ball). Other individual items of this meritorious exhibit were Mushrooms, Turnips, and Seakale. (Silver-gilt Knightian Medal.)

Messrs. E. Westmacott & Co., Strand, London, showed an interesting collection of ripe fruits from South Africa. The Pears Williams's Bon Chrêtien, Pineapples and Melons were admirable. Peaches had not travelled so well, but several dishes of Plums (Chalcot) arrived in perfect condition. (Silver-gilt Banksian Medal.)

ROYAL METEOROLOGICAL.

March 12.—At the monthly meeting of this society, which was held at the Surveyors' Institution, Great George Street, Westminster, on Wednesday evening, the 12th instant, Mr. C. J. P. Cave, president, in the chair, a lecture was given by Mr. R. G. K. Lempfert, the superintendent of the Forecast Department of the Meteorological Office, on "Weather Forecasts: Past and Present."

He began by tracing the evolution of the modern forecast service from the beginning in 1850, under Admiral FitzRoy, up to the present time. Meteorological telegraphy formed an important subject of discussion at the meeting of the British Association, held in Aberdeen in 1859, under the presidency of the Prince Consort, and in the following summer the collection of daily telegraphic reports of the weather was commenced by the Meteorological Department of the Board of Trade, now the Meteorological Office. The gradual extension of the area from which reports are received was traced, and the improvements in the charts and reports illustrated by lantern slides. Throughout the development the newspaper Press has taken a prominent part. Even before the days of official meteorology, in 1849, the *Daily News* had organised the collection of information by telegraph from a network of stations. In 1875 the *Times* started and bore the whole cost of the evening weather service of the Meteorological Office. Subsequently the *Times*, *Standard*, and *Daily News* shared the expense of this service, and it was not until the end of 1880 that the charges were taken over by the Government.

The lecturer then proceeded to describe the present organisation of the Meteorological Office for the collection of information, for charting it when collected, and for communicating it to the public. For the preparation of forecasts, information is received each day by telegraph from thirty British stations and from forty on the Continent of Europe and the islands of the North Atlantic. Information from thirty stations is, however, quite inadequate for checking the accuracy of the forecasts. For this purpose results from more than 130 stations are used. The forecasts are checked separately for wind and weather, the term weather being considered in regard to (1) temperature; (2) precipitation; (3) cloudiness or the reverse; (4) fog. The extension of the period covered by the forecasts for "Further Outlook" was next described, and the application of this to the notification of probable spells of fine weather which the Meteorological Office now issues to farmers during the summer.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

March 6.—*Committee present:* Rev. J. Crombleholme (in the chair), Messrs. J. Cypher, J. Evans, Dr. Hartley, J. Lupton, D. McLeod, H. G. Morris, F. K. Sander, Wm. Thompson, H. Thorp, A. Warburton, Z. A. Ward, and H. Arthur (Secretary).

A *Silver-Gilt Medal* was awarded to R. Ashworth, Esq., Newchurch (gr. Mr. Gilden), who staged a choice group of well-known Odontoglossums.

Large Silver Medals to Z. A. Ward, Esq. Northenden (gr. Mr. Weatherby), for an excellent group of Odontoglossums; S. Gratrix, Esq., Whalley Range (gr. Mr. Brown), for a choice group; Col. J. Rutherford, M.P., Blackburn (gr. Mr. Lupton), for a miscellaneous group; A. Warburton, Esq., Haslingden (gr. Mr. Dalgleish), for a group composed of Cypripediums.

A *Silver Medal* to Messrs. J. Cypher and Sons, Cheltenham, for Dendrobiums.

Bronze Medal to Rev. J. Crombleholme, Clayton-le-Moors (gr. Mr. Marshall), for a small group of Cypripediums.

Other exhibitors were: Wm. Thompson, Esq., Walton Grange (gr. Mr. Howes); J. J. Holden, Esq., Southport (gr. Mr. Johnson); Messrs. Sander and Sons, St. Albans; Messrs. Charlesworth and Co., Haywards Heath; Mr. D McLeod, Chorlton-cum-Hardy; Mr. J. Birchenall, Alderley Edge; and Mr. J. Evans, Congleton

AWARDS.

FIRST-CLASS CERTIFICATE.

Odontioda St. Fuscien "Ward's" variety (Odontoglossum Adrianæ × Cochlioda Noezliana); a good flower, and very dark in colour, from Z. A. WARD, Esq.

AWARDS OF MERIT.

Cypripedium Richard Ashworth (Lathomianum giganteum × leeanum Clinkaberryanum); *Odontoglossum Cloth of Gold* (Wilckeanum × amabile); *Odontoglossum leeanum majus* (Black Prince × General Roberts), all from R. ASHWORTH, Esq.

Odontioda Zephyr "West Point" variety, and *Cypripedium Duke of Marlborough* (leeanum Lavertonianum × Adrastus Mariæ), from S. GRATRIX, Esq.

Odontoglossum A. E. Thompson, parentage unknown, and *Cypripedium Mrs. E. G. Guest* (Thompsonianum × Alcibiades), from WM. THOMPSON, Esq.

Cattleya Trianae "Snowflake," from Messrs. A. J. KEELING AND SONS.

SCOTTISH FRUIT TRADE.

MARCH 8.—The annual meeting of the members of the Scottish Fruit Trade Association was held in Glasgow on this date. Mr. Francis Stephen occupied the chair. The annual report made special mention of the fact that some of the wholesale fruit merchants made a practice of selling to private persons, and it expressed the hope that this would soon cease, through the endeavour being made by the association. Mr. Matthew Stewart was elected President, Mr. Walter Gardener, Treasurer, and Mr. Daniel Gardner, Secretary.

FINCHLEY CHRYSANTHEMUM.

THE annual general meeting of the Finchley Chrysanthemum Society was held at the Railway Hotel, Church End, Finchley, recently. Mr. Stanley Wildash presided.

The Secretary reported that Mr. T. J. Fisher had presented a challenge cup to be awarded as the Committee thought fit.

The Chairman, in moving the adoption of the report, said they had had an excellent year, largely due to their President, Mr. Ward, and their Secretary, Mr. Druett. Mr. Stanley Wildash was re-elected Treasurer. Messrs. Howard and Battson were re-elected Auditors. Mr. W. J. Druett was unanimously re-elected Secretary.

It was decided to hold the Society's exhibition either on November 12 and 13, or 13 and 14.

NORTH OF ENGLAND HORTICULTURAL.

MARCH 12-13.—The spring show of this society was held on these dates in the Central Baths, Bradford. The following awards were made by the Orchid Committee :—

SECOND CLASS DIPLOMAS to *Dendrobium Austinii Thwaites' variety; Lycaste Skinneri The Knowle variety*, both from J. HARTLEY, Esq.; and *Odontoglossum Rolfae violacea* from Messrs. MANSELL AND HATCHER.

The Orchid Committee also granted the following medals for groups of Orchids :—(*Silver Medals*) to Messrs. J. HARTLEY, The Knowle, Morley; W. SHACKLETON, Great Horton, Bradford; F. A. HINDLEY, Great Horton; and MANSELL AND HATCHER, Rawdon, Leeds. (*Bronze Medal*) to Messrs. A. J. KEELING AND SON, Westgate Hill, Bradford. (Mr. J. Scott, Newlay, Horsforth, Leeds, showed Dendrobium Jamesianum.)

The Floral Committee granted the following medals :—(*Large Silver Gilt Medals*) to Messrs. J. WOOD AND SON, Boston Spa, Yorkshire, for Rockwork and Alpines; and R. SYDENHAM, LIMITED, Birmingham, for Narcissi. (*Large Silver Medals*) to Messrs. E. J. BATCHELOR AND SONS, Harrogate, for Bulbs, Shrubs, and Stove Plants; J. BROOKE, Bradford, for Bulbs; and G. REUTHE, Keston, Kent, for Alpines. (*Silver Medal*) to Messrs. S. BROADHEAD AND SON, Huddersfield, for Alpines. (*Large Bronze Medals*) to Messrs. J. HANDY AND SON, Bradford, for Forced Shrubs and Bulbs; and Thornton Mechanics' Institute Horticultural Society.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

MARCH 11.—The monthly committee meeting of this society was held at the R.H.S. Hall on this date. Mr. Thomas Winter occupied the chair. The sick pay for the month was £65 4s. 4d., and for the State Section £22 3s. 4d., and one maternity claim £1 10s. The sum of £46 19s. 9d. standing to the credit of the late Mr. William Woods, who was for nearly thirty years a member of the committee, was passed for payment; also the sum of £48 8s. 2d. standing to the credit of the late Mr. Wm. Ford. One member residing in the U.S.A., having reached the age of 70, was allowed to withdraw the sum of £104 12s. 9d., leaving a balance of £10 standing to his credit. One lapsed member was allowed to withdraw £38 8s. standing to his credit. Six new members were elected. The annual meeting will be held on April 14.

DEBATING SOCIETIES.

BIRMINGHAM AND MIDLAND COUNTIES GARDENERS'.—At the meeting of this Association held on the 24th ult., Mr. Jeffs, Gardener to E. Ansell, Esq., Meer Hall, Sutton Coldfield, gave a lecture on "Hardy Fruits." One of the most important details in the cultivation of hardy fruits, said Mr. Jeffs, was the aspect of the plantation, which should be sheltered on the west and slope to the south. The best time for planting the trees was early autumn—not later than the middle of October. Before planting care should be taken to remove all damaged roots by means of a sharp knife. In dealing with Strawberries, the lecturer stated that an ideal bed could be made about the third week in August by transferring plants from pots to a ground that had been cropped with early potatos. In reply to a question, Mr. Jeffs stated that one of the most effective washes for fruit trees is acetate of lead, but this chemical should only be used before the blossoms appear. At the meeting held on the 11th inst. Miss G. Cope, Gardener to Geo. Cadbury, Esq., Manor House, Northfield, Birmingham, gave a paper on "Roses for Garden Decoration." Miss Cope stated that although Birmingham was by no means an ideal district for Roses, its general clayey soil being much too heavy, in many parts of the district good results could be obtained if the sandy sub-soil were removed and replaced by suitable loam. The best time for planting Roses, said Miss Cope, was October; even though the leaves were still green at that time. If the planting has to be deferred it should not be done until March. Hybrid Perpetuals were the best decorative Roses, and if the shoots were pegged down the result would be, in many instances, an increase of bloom. One of the best of the Rambler varieties, said Miss Cope, was Jersey Beauty, whilst of the Tea Ramblers Queen Alexandra was to be recommended.

BATH GARDENERS'.—At the meeting held on the 10th inst. Mr. H. Roper, a member of the Association, read a paper on "The Seakale." The Chairman, before introducing Mr. Roper, stated that he had received a letter stating that the City Council had granted the use of the rooms, as previously announced, with the free use of the orchestra, for the Chrysanthemum Show on November 5 and 6.

CARDIFF GARDENERS'.—At the meeting of the above Association, held on the 4th inst., Mr. W. Horne, gardener at "The Mount," Dinas Powis, gave a lecture on "The Cultivation of Culinary Peas." Mr. A. H. Cosson presided. Mr. Horne advised a thorough trenching and manuring of the ground in the autumn and winter, also dressing the soil with lime in the spring. He also recommended the use of the following mixture at the time of sowing :—½ cwt. superphosphate, 28 lbs. sulphate of ammonia, 14 lbs. sulphate of potash, and 14 lbs. steamed bone flour, to be sown in the drills at the rate of 4 ozs. per yard run. This mixture was said to be especially useful in the case of early Peas, making a difference of a week or ten days earlier in the crop. The following varieties were recommended :—Early—Primo, Early Morn, and Gradus. Second Early—Duke of Albany, Telephone, and Dreadnought. Maincrop—Centenary, Quite Content, and Royal Salute. Late—Autocrat and Carter's Latest Giant.

STIRLING AND DISTRICT HORTICULTURAL.—The usual monthly meeting took place on March 2, when Mr. Wm. Watt occupied the chair. Mr. Hosking, Agricultural College, Glasgow, delivered a lecture on "Insect Pests of Vegetables and Fruit Trees," which was illustrated with lantern slides. The chief pests of the vegetable and fruit garden were described, and means for their prevention or eradication given. The composition of certain washes and sprays was described. Five new members were elected. The Society voted two guineas for children's prizes at the Stirling Horticultural Society's autumn show.

DUMFRIES AND GALLOWAY GARDENERS.—The fortnightly meeting of this Association was held in St. George's Hall, Dumfries, on March 8, Mr. S. Arnott presiding over the largest attendance for the session. A paper on "Vegetables for Showing" was read by Mr. E. Joss, Crichton Royal Institution Gardens, who, before taking up his present appointment, was a successful exhibitor at the northern shows.

ELSTREE AND BOREHAM WOOD HORTICULTURAL.—At the meeting of this Society held on the 13th inst., Mr. E. Molyneux gave a lecture on "Herbaceous Plants." A good attendance of the members and friends assembled in the dining hall at Elstree School, which was lent by E. L. Sanderson, Esq., who presided. The choice of site for Herbaceous Plants, said Mr. Molyneux, mattered but little, provided overhanging trees were avoided. He strongly advised trenching the ground, and especially heavy soils, adding as liberally as possible manure and other materials that will lighten the texture. He recommended planting on light soils to be done in the autumn, preferably October, but on heavy soils spring planting is best. He urged the importance of lifting and replanting the outer and stronger young growths. Staking, mulching and watering were each dealt with, and the desirability of obtaining the newer varieties of plants insisted upon.

STEVENAGE AND DISTRICT HORTICULTURAL.—The Spring Show of this Society was held on the 12th inst. at the Parish Rooms, Stevenage. In the competitive classes the entries amounted to nearly 100. Choice groups were shown by the Earl of Lytton (Gr., Mr. H. Brotherston), Lord Hampden (Gr., Mr. C. J. Martin), J. G. Rose (Gr., Mr. J. H. Shipley), Mrs. H. Barclay (Gr., Mr. H. Good), and Mrs. Western. Mrs. Payne showed excellent plants of Azalea indica. Trade exhibits were staged by Mr. Clarance Elliot, Stevenage, who exhibited rock and Alpine plants (Large Silver Medal); Mr. Stuart Maples, who showed a well-arranged rock garden (Large Silver Medal); Mr. Redford, who displayed Daffodils and Tulips in pots and vases (Large Silver Medal); Messrs. Cutbush and Sons, who exhibited vases of Carnations, flowering and foliage plants (Silver Medal); and Messrs. Fells and Son, who staged rock and Alpine plants in variety (Large Bronze Medal).

KILMARNOCK AND DISTRICT GARDENERS'.—At the monthly meeting of this Society, held on the 12th inst., Mr. R. K. Sillars presided over a good attendance, and Mr. R. G. Hepburn, Culzean Gardens, near Maybole, read a paper on "Rockeries and Alpines." Mr Hepburn stated that the best kind of rockery is that which imitates as nearly as possible the natural outcrop of rocks on a hill-side. In constructing such a rockery the stones should be laid flat and run in stratas. The first and last consideration in making a rockery, said Mr. Hepburn, should be the provision of efficient drainage.

BRISTOL AND DISTRICT GARDENERS'.—The fortnightly meeting of the above Association was held on the 13th inst., when Col. Cary Batten, J.P., presided over a moderate attendance of the members. Mr. Shakleton delivered a lecture on "Useful Plants for Decoration all the Year Round." In the competition, open to under-gardeners, for spray and buttonholes, to be made up in the room, the prizes were won by Messrs. Wiltshire, Coombs, and Towell respectively.

CHESTER PAXTON.—The concluding lecture for the present session was delivered at the Grosvenor Museum on the 15th inst. by Mr. N. F. Barnes, whose subject was "The Royal International Horticultural Exhibition of 1912; Its Object, Attainments, and Lessons." By the aid of lantern slides Mr. Barnes showed pictures of many of the leading features and principal exhibits at the Exhibition. Reference was also made to the educational aspect of the Exhibition, which, the lecturer pointed out, was of great value.

CATALOGUES RECEIVED.

A. F. DUTTON, Iver, Buckinghamshire.—Carnations.

AMOS PERRY, Enfield, Middlesex.—Perennial and Rock Plants.

LISSADELL, Sligo, Ireland.—Seeds, Alpine and Herbaceous Plants, Shrubs, etc.

E. A. WHITE, LTD., Beltring, Paddock Wood, Kent.—"Abol" Syringes and Insecticides, with notes on insects and fungous pests.

Foreign.

ATLANTIC NURSERY COMPANY, Berlin, Maryland.—Trees, Shrubs, Vines, Perennial Plants and Bulbs.

JULES DE COCK, Meirelbeke, Gand, Belgique.—Nursery stock

SOUPERT & NOTTING, Luxemburg (Grand-Duchy)—New Roses.

GARDENING APPOINTMENTS.

[*Correspondents are requested to* **write the names of persons and places as legibly as possible.** *No charge is made for these announcements, but if a small contribution is sent, to be placed in our collecting Box for the Gardeners' Orphan Fund, it will be thankfully received, and an acknowledgment made in these columns.*]

MR. E. BENNETT, for the past four years Foreman at Old Down House, Tockington, Gloucestershire, as Gardener to H. W. L. HARFORD, Esq., Horton Hall, Chipping Sodbury. [Thanks for 2s. for R.G.O.F. box.—EDS.]

MR. W. E. EAST, previously Gardener to C. SHEPHERD CROSS, Esq., late of the Oaklands, Preston Brook, Cheshire, as Gardener to the same gentleman at Alderwasley Hall, near Matlock, Derbyshire.

MR. H. FISHENDEN, for the past two years General Foreman at Billown Gardens, Castletown, and formerly Foreman at Park Hatch Gardens, Godalming, as Gardener to C. C. BLACK, Esq., Cranham Holme, Upminster, Essex. [Thanks for 1s. sent for R.G.O. Fund.]

MR. H. BARSON, as gardener to the Dowager Lady BURTON, Rangemore, Burton-on-Trent, in succession to the late Mr. William Bennett.

Obituary.

William Bennett.—We regret to record the death, on the 11th inst., in his seventieth year, of Mr. William Bennett, gardener to Lady Burton, at Rangemore Hall, Burton-on-Trent. Mr. Bennett, who had been in ill-health for about two years, was head gardener at Rangemore Hall for some 42 years, being first employed by Mr. Michael Thomas Bass. Mr. Bennett was born at Windsor, and commenced his gardening career at Chatsworth Gardens. He was a clever landscape gardener, and made extensive alterations in the gardens at Rangemore Hall. He also took an active part in the erection of various cottages on the estate, which are so pleasantly situated and well arranged as to make Rangemore a model village. Mr. Bennett is succeeded by Mr. H. Barson, whose appointment is notified on another page.

George Clark.—We regret to record the death at Dover, on the morning of the 11th inst., of Mr. George Clark, senior partner of the firm of Messrs. G. and A. Clark, Ltd., nurserymen, Dover, Folkestone, Walmer, and Margate, which was established by Mr. Clark's father in 1836. The funeral took place on the 14th inst., at Charlton Cemetery, and was preceded by a service in Buckland Wesleyan Chapel. Mr. Clark was only 62 years of age.

Charles Williams.—The American horticultural papers announce the death of Mr. Charles Williams, formerly a florist at Bay City, Michigan, U.S.A., aged 81 years. Mr. Williams was a native of England, but had lived in the United States of America for the past 30 years.

THE WEATHER.

The Following Summary Record of the weather throughout the British Islands, for the week ending March 15 is furnished from the Meteorological Office :—

GENERAL OBSERVATIONS.

March 18, 1913.

Weather.—The conditions were upon the whole very unsettled, but fair dry intervals were not infrequent over England. Sleet and snow showers occurred over a wide area on the 14th and 15th, and were accompanied by thunder and lightning in many localities.

Temperature was above the average except in Ireland, the excess being as much as 3° in England E. In Scotland the excess was less than 0.5°. The highest of the maxima were mainly recorded about the middle of the week, and ranged from 57° in the English Channel to 52° in Ireland, and to 51° in Scotland W. The lowest of the minima, which were registered on rather irregular dates, varied from 24° in England S.W. and 25° in England E. and the Midland Counties to 30° in Scotland N., and to 37° in the English Channel. The lowest grass readings were 16° at Fulbeck and Wisley, 17° at Birmingham and Blackpool, and 19° at West Linton and Plymouth. At all stations the temperature of the soil both at 1 ft. and 4 ft. was above the normal.

Bright Sunshine was less than the normal except in Scotland E. and England N.W. The percentage of the possible duration ranged from 36 in Scotland E., and 33 in England N.E. to 19 in Ireland S. and England S.W., and to 17 in England N., where the mean daily amount was only 2 hours. In Scotland E. the daily mean amounted to 4.1 hours.

THE WEATHER IN WEST HERTS.

Week ending March 19, 1913.

A return to colder weather.—The first two days of the week proved warm for the time of year, but since then lower temperatures have prevailed. On the warmest day the temperature in the thermometer screen rose to 53°, and on the coldest night the exposed thermometer registered 17° of frost. The latter is, with one exception, the lowest reading recorded here in March during the past fourteen years. The ground is at the present time 1° warmer than the average at 2 feet deep, but of only about seasonable warmth at 1 foot deep. Rain has fallen on each of the last five days, and to the total depth of three-quarters of an inch, or more than was deposited in the whole of the preceding thirty-three days. Snow fell on the last two days, but on each occasion the flakes melted on reaching the ground. About 1¼ gallon of rain water has passed through both percolation gauges during the last two days. Previous to this no measurable quantity had come through either gauge for nearly a month. The sun shone on an average during the week for 3¾ hours a day, which is slightly in excess of the usual duration in the middle of March. The winds again proved rather high, and in the windiest hour the mean velocity reached twenty miles—direction, W.S.W. During the last twenty-three days the wind has for only three hours come from any point of the compass between north and east. There has been about a seasonable amount of moisture in the air at three p.m. An Early Rivers Peach growing on a south wall in my garden came first into blossom on the 14th, or eight days earlier than its average date for the previous twenty-seven years, and 3 days earlier than last year. *E. M., Berkhamsted, March 19, 1913.*

MARKETS.

COVENT GARDEN, March 19.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general averages for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed the supply in the market, and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—Eds.]

Fruit: Average Wholesale Prices.

	s.d.	s.d.
Apples:		
— Cooking, per bushel	4 0	8 0
— French Russets, box	7 0	8 6
— Canadian, brls.	16 0	25 0
— Wenatchee, p. case	7 6	10 6
— American, brls.	18 6	30 0
— Californian Newtowns, pr. case	7 0	8 0
— Nova Scotian, per barrel	12 0	18 6
— Oregon, Newtown Pippin, per case	9 6	10 6
Bananas, bunch:		
— Doubles	10 0	12 0
— No. 1	9 0	10 0
— Extra	11 0	12 0
— Giant	12 0	16 0
— Loose, p. doz.	0 6	1 6
— Red coloured	4 6	5 6
— Jamaica, per ton	£9	£12
— Jamaica Ordinary, per box (9 doz.)	5 0	5 6
Dates, per dozen	2 9	3 0
— Egyptian, cwt.	25 0	—
Cranberries, p. case	9 0	—
Grape Fruit, case:		
— 96's	8 0	20 0
— 80's		
— 64's		
— 54's		
— per dozen	4 0	6 0
Grapes (English), per lb.:		
— Canon Hall	8 0	12 6
— Black Alicante	1 6	2 6
— Almeria, barrel	18 0	25 0
— — per doz. lbs.	7 6	8 6
— Gros Colman	1 2	2 6
— Belgian, p. lb.	1 0	1 9
— Cape, per box	5 0	6 0
Lemons, Messina, per case	11 6	22 0
Lychees, 1 lb box	1 6	—
Mangoes, Cape, dz.	6 0	8 0
Melons, Cape	1 6	2 0
Nuts, Almonds, bag	52 6	—
— Brazils, cwt.	54 0	62 0
— Spanish, sack	40 0	42 6
— Barcelona, bag	35 6	36 0
— Cocoanuts, 100	18 0	23 0
— English Cobs, per lb.	0 3	0 4
— Chestnuts, bg.	14 0	26 0
— Walnuts, French, p. cwt.		
— Naples, p. cwt.	64 0	—
Nectarines, Cape, box	4 0	10 0
Oranges:		
— Seville, sours, case	18 0	20 0
— Messina, bitters, case	9 0	9 6
— Jaffa, per case	8 6	9 0
— Murcia	8 0	10 0
— Mandarines, p. box	0 9	7 0
— Florida Tangerines, p. case	14 0	16 0
— Denia, per case	12 6	32 0
— Californian, Seedless, case	11 6	13 6
— Palermo bloods	7 6	8 0
Peaches, Cape, box	3 0	6 0
Pears:		
— Cape, box	3 6	6 0
— American stewers, case	5 0	—
— Californian, Winter Nelis, per case	13 6	14 6
— — Easter Beurré, p. case	8 0	8 6
Pineapples, St. Michael	2 6	4 0
— Cape, dozen	4 0	8 0
Plums, Cape, box	3 0	8 0
— Cape Apple, per box	7 0	12 0
Rhubarb, doz. bndl.	0 8	1 0
— Natural	3 0	—
Strawberries, p. lb.	4 0	8 0

Vegetables: Average Wholesale Prices.

	s.d.	s.d.
Asparagus, Giant, per bundle	16 0	20 0
— English, per bundle	2 6	3 0
— Paris green	3 3	3 9
— Sprue, bundle	0 8	0 9
— Dijon	3 3	3 6
— Lauris	5 0	—
— Cavaillon	3 0	3 6
Artichokes (Globe), per dozen	2 6	3 0
— ground, ½ bus.	1 6	—
— Batavia, French, dozen	2 6	—
Beans:		
— Guernsey, lb.	1 0	1 6
— English, per lb.	1 0	1 6
— French, per lb.	1 0	1 3
— — broad, pad	6 0	6 6
— Madeira, per handle	3 6	4 6
Beetroot, p. bshel.	2 0	2 6
— bags	3 9	—
Broccoli, bushel	1 0	1 6
— bags	1 6	1 9
Cabbages, p. tally	3 0	5 0
— per doz.	2 6	3 6
Carrots (English), pr. doz. bun.	2 0	3 0
— French, dozen	8 6	12 0
— per pad	4 0	—
— unwashed, per bag	2 6	3 0
— washed, bag	3 0	3 6
Cauliflowers, per tally	8 0	10 0
— boxes	4 6	6 6
Celeriac:		
— Italian Heads, per basket	3 0	3 6
— French, p. doz.	4 0	4 6
Celery, per dozen "fans"	9 0	18 0
Chicory, per lb.	0 2	0 2½
Cucumbers, per dozen	6 0	12 0
Endive per dozen	2 6	3 0
— French, p. doz.	3 6	4 6
Greens, per bushel	1 6	—
— bags	2 0	—
Horseradish, 12 bundles	10 0	12 0
Leeks, per doz.	1 0	1 6
Lettuce, per doz.	2 0	—
— French, per crate	3 6	4 0
Mint, per dozen bunches	3 6	6 0
Mushrooms, cultivated, per lb.	0 10	1 0
Mustard and Cress, per doz. punnets	0 10	1 0
Onions (English), per bag	3 0	3 3
— per bushel	1 6	2 0
— picklers, per ½ bushel	2 6	3 0
— (spring), per doz. bunches	2 0	—
— (Spanish), case	5 6	6 6
— Dutch, bags	2 6	2 6
Peas, French, pad of 10 lb.	4 0	5 0
— Guernsey, p. lb.	2 6	4 0
Parsley, per doz. bunches	2 0	3 0
Parsnips, per bag	2 0	3 0
— pe. bushel	1 2	1 6
Radishes (French), per dozen	1 6	2 0
Sage, per dozen	2 0	—
Savoys, per tally	3 6	5 6
— per box	2 0	2 6
Seakale, punnets	0 10	1 0
— outdoor, box, 12 lb.	4 0	—
Spinach, p. bushel	4 0	4 6
— French, crate	3 6	4 0
Sprouts, ½ bushel	1 6	2 0
— bags	2 0	2 6
Scotch Kale, bushl.	1 0	1 6
Tomatos, English, per lb.	0 10	1 3
— Canary, p. bdl.	12 0	16 0
Thyme, per dozen bunches	1 6	2 0
Turnips (English), per dozen bunches	2 0	2 6
— French, dozen	12 0	14 0
— per bag	2 6	3 0
— unwashed, bag	2 6	—
Turniptops, bushel	1 3	1 6
— per bag	2 6	—

Cut Flowers, &c.: Average Wholesale Prices.

	s.d.	s.d.
Arum (Richardias)	4 0	5 0
Azalea, per dozen bunches	4 0	—
Camellias, white, per dozen	3 0	—
Carnations, per dozen blooms, best American varieties	1 6	2 0
— smaller, per doz. bunches	12 0	15 0
— Carola (crimson), extra large	3 0	4 0
— Malmaison, p. doz. blooms:		
— — pink	12 0	15 0
Daffodils, per doz. bunches:		
— Golden Spur	2 0	3 0
— Sir Watkin	2 0	3 0
— Victoria	3 0	—
— Princeps	2 0	—
Eucharis, per doz.	3 0	4 0
Freesia, white, per doz. bunches	1 6	2 0
Gardenias, per box of 15 and 18 blooms	6 0	8 0
Lilium auratum, per bunch	2 0	2 6
— longiflorum, per doz., long	4 0	5 0
— — short	4 0	—
— lancifolium alba, long	2 0	—
— — short	2 0	—
— — speciosum rubrum, per doz., long	2 0	—
Lilium speciosum rubrum, short	1 0	1 3
Lily of the Valley, per dozen bunches:		
— extra special	18 0	—
— special	12 0	15 0
— ordinary	10 0	—
Orchids, Cattleya, per doz.	12 0	—
— Cypripedium	3 0	—
— Odontoglossum crispum	4 0	—
Pelargoniums, p. dz. bunches, Double Scarlet	8 0	—
Roses, 12 blooms:		
— Countess Derby	6 0	—
— Liberty	3 0	6 0
— Niphetos	3 0	—
— Pink Beauty	3 0	6 0
— Richmond	3 0	6 0
— Rose Queen	6 0	—
— Sunburst	5 0	8 0
— Ward	3 0	5 0
— Mermets	4 0	5 0
Spiræa (Astilbe) japonica, per dz. bunches	8 0	—
Tulips, per dozen bunches:		
— double red	10 0	12 0
— — orange	10 0	12 0
— — pink	10 0	12 0
— single red	12 0	—
— — white	10 0	12 0
— — yellow	8 0	9 0
— — bronze	9 0	—
— — pink	9 0	10 0
Violets, Princess of Wales, per dozen bunches	2 0	4 0
— Anemone fulgens	2 6	3 0

Cut Foliage, &c.: Average Wholesale Prices.

	s.d.	s.d.
Adiantum Fern (Maidenhair), best, per doz. bunches	6 0	7 0
Agrostis (Fairy Grass), per doz. bunches	2 0	4 0
Asparagus plumosus, long trails, pr. ½doz.	1 6	2 0
— medium, doz. bunches	12 0	18 0
— Sprengeri	10 0	12 0
Berberis, natural, per doz. bnchs.	3 0	4 6
Carnation foliage, doz. bunches	3 0	—
Croton foliage, various, doz. bnchs.	12 0	15 0
Cycas leaves, artificial, per doz.	3 0	12 0
Eulalia japonica, per bunch	1 0	1 6
Moss, gross bunches	6 0	—
Myrtle, doz. bnchs. (English), small-leaved	6 0	—
— French	1 0	—
Smilax, per bunch of 6 trails	1 0	1 3

French Flowers: Average Wholesale Prices.

	s.d.	s.d.
Allium, per pad	8 0	9 0
Anemone, double pink, per doz.	1 0	1 6
Lilac, White, per bunch	3 6	4 0
— mauve	5 0	—
Marguerite, yellow, per dozen bunches	1 9	2 0
Narcissus, Paper White, pr. pad, 48 bunches	16 0	—
Ranunculus, per doz. bunches:		
— Barbaroux	4 0	5
— double scarlet	8 0	9
— yellow	8 0	10 0
— bronze	10 0	12
— carmine	5 0	6
Violets, per pad	4 0	—
— Parma, large bunches, each	2 0	2 6

Guernsey Flowers: Average Wholesale Prices.

	s.d.	s.d.
Narcissus—doz. bun.:		
— Soleil d'Or	2 0	—
— Grand Primo	2 6	3 0
— Sir Watkin	2 6	—
— Emperor	2 6	—
Narcissus:		
— Empress	—	—
— Horsfeldii	—	—
— Gloriosa	1 9	2 0
— Poeticus	2 6	3 0

Plants in Pots, &c.: Average Wholesale Prices.

	s.d.	s.d.
Azalea, white and coloured, per dozen pots	30 0	36 0
Aralia Sieboldii, doz	6 0	7 0
Araucaria excelsa, per dozen	18 0	21 0
Asparagus plumosus nanus, per dozen	10 0	12 0
— Sprengeri	8 0	9 0
Aspidistra, p. dz., green	21 0	30 0
— variegated	30 0	60 0
Cinerarias, p. doz.	8 0	9 0
Cocos Weddeliana, per dozen, 60's	6 0	12 0
— larger, each	2 6	10 6
Croton, per dozen	18 0	30 0
Cyclamens, 48's	10 0	12 0
Cyperus alternifolius, p. doz.	5 0	6 0
— laxus, per doz.	4 0	5 0
Dracæna, green, per dozen	10 0	12 0
Erica hyemalis	10 0	12 0
Gracilis, 48's	10 0	12 0
Ferns, in thumbs, per 100	8 0	12 0
— in small and large 60's	12 0	20 0
— in 48's, per doz.	6 0	
Ferns:		
— choicer sorts, per doz.	8 0	12 0
— in 32's per doz.	10 0	18 0
Ficus elastica, per dozen	9 0	12 0
Genistas, per doz.	10 0	12 0
Geonoma gracilis, 60's per dozen	6 0	8 0
— larger, each	2 6	7 6
Hyacinths, white, in pots, p. doz.	8 0	9 0
Kentia Belmoreana, per dozen	5 0	42 0
— Fosteriana, 60's, per dozen	4 0	6 0
— — larger, per dozen	18 0	63 0
Latania borbonica, per dozen	12 0	30 0
Lilium lancifolium rubrum in pts., per dozen	18 0	21 0
Lilium lancifolium alba, in pots, dozen	18 0	21 0
Lilium longiflorum per dozen	18 0	30 0
Lily of the Valley	18 0	21 0
Marguerites, in 48's per doz., white		

Plants in Pots, &c.: Average Wholesale Prices (cont.)

	s.d.	s.d.
Pandanus Veitchii, per dozen	36 0	48 0
Pelargonium (Geranium), double scarlet, 48's	4 0	5 0
— other varieties	5 0	6 0
Phœnix rupicola, each	2 6	21 0
Spiræa japonica, per dozen pots	6 0	8 0
— pink	10 0	12 0
Tulips, per box of 24's-		
— white	1 9	2 0
— pink	2 0	2 6
— scarlet (Flowers or Bulbs)	1 9	2 0

Potatos.

	per cwt. s.d.	s.d.		per bag. s.d.	s.d.
Bedfords	4 0	4 6	Dutch	2 9	3 6
Kents	4 3	5 0	Belgian	3 6	4 6
Blacklands	3 6	3 9	German	3 9	4 6
Evergoods	3 6	3 9	Dunbars	5 6	6 6
King Edward	4 0	5 0	Scotch (grey soil)	4 0	5 0

REMARKS.—There is a keen demand for tubers of best quality, which are very scarce. Commoner tubers are plentiful and a drug on the market. Stocks in London are about the same as last week. *Edward J. Newborn, Covent Garden and St. Pancras, March 18, 1913.*

FRUITS.—The only varieties of English Apples obtainable in Covent Garden Market are Dumelow's Seedling (Wellington) and Bramley's Seedling. Nova Scotian, Californian, Oregon, Newtown and Wenatchee Valley Apples continue to be plentiful. The supplies of English, Belgium, Cape and Almeria Grapes are sufficient for the demand. The supply of forced Strawberries is an increasing one, but the demand is limited. There are fairly good supplies of English and Teneriffe Tomatos. The shipment of Cape Fruits which reached the market this week consisted of Peaches, Pears, Plums, Grapes, Pineapples, and Melons, and amounted, in all, to 30,000 boxes. Mushrooms are a good supply, with a brisk demand. The market is well supplied with Paris Green, Lauris and Cavaillon Asparagus, and prices are lower. Supplies of forced vegetables are increasing daily. English and French Salads continue plentiful; the list now includes Belgium-grown Chicory. The commoner Vegetables are available in quantities equal to the demand. *E. Rides, Covent Garden, March 18, 1913.*

Answers to Correspondents

CANKER IN MARÉCHAL NIEL ROSE.—This beautiful Rose is more susceptible to attacks of canker than most other varieties, and whilst certain precautions will mitigate the trouble, there is no known cure. As the plant is cankered at the base, we would suggest that you bind Sphagnum-moss around the diseased part and then heap potting compost about the lower part of the stem. Roots will develop in due course from healthy wood, and the disease will be checked. We have seen this treatment applied to standard plants when the canker had former close to the head, near to where the plant has been budded. Wire netting was put around the stem to hold turf from the ground level to the cankered part, previously encasing the latter with Sphagnum moss. The soil was kept moistened, and new roots developed in the enclosed soil.

CROQUET GROUND: *J. P.* In order to secure uniformity in laying out a croquet ground, the Croquet Association has drawn up the following regulations. The ground should be rectangular, 35 yards in length by 28 yards in width, with a defined boundary. A flag shall be placed at each corner, and corner spots, 3 feet from both boundaries, shall be accurately defined. Points on the boundary 3 feet from each corner flag shall be marked by white pegs, not exceeding three-quarters of an inch in diameter, and 3 inches above the ground. The baulk shall also be defined. The hoops shall stand 12 inches out of the ground, outside measurement, and be firmly fixed. The crown shall be straight and at right angles to the uprights, which shall be not less than 3¾ inches or more than 4 inches apart (inside measurement) from the ground upwards. The turning and the winning pegs shall be of wood, of a uniform diameter above the ground of 1½ inches. They shall stand 18 inches out of the ground and be firmly fixed. Measurements:—Setting No. 1: Pegs in centre line of ground 7 yards from nearest boundary; hoops in centre line of ground 7 yards from peg and 7 yards apart; corner hoops 7 yards from nearer peg and 7 yards from the nearest boundaries. Setting No. 2: The winning peg equidistant from the corner; hoops in centre line of ground 7 yards from peg; corner hoops 7 yards from the nearest boundaries. In laying out a croquet ground it is essential to have sufficient room outside the lawn (35 yards by 28 yards) to allow of the roller or mower being turned. This is necessary to avoid unduly wearing the most important part of the turf, viz., that where the "yard line" is situated. You will find four different plans of a croquet ground, each in accordance with the rules of the Croquet Association, in the issue for May 22, 1909.

DAISIES IN CRICKET-GROUND: *H. S. C.* During all the time Daisies are in bloom the Daisy-rake should be constantly employed, to prevent their increase by seed, and, as the severed seed heads will often ripen their seeds whilst lying on the ground, the use of the grass box on the lawn-mower is imperative. As many plants as possible should be removed now by using a Daisy weeder; where the Daisies are present in big patches it would be well to dig them up and remove every portion of the underground stems, then lay fresh turf or sow grass seed. The superphosphate which you have been applying each spring would encourage the growth of the Daisies, and in its place a nitrogenous manure (such as 1lb. of sulphate of ammonia per square rod; for convenience of distribution the chemical should be mixed with four or five times its bulk of fine soil) should be used. The nitrogenous manure will cause the grass to grow so freely as in time to crowd out the Daisies and other weeds.

HIBISCUS (ALTHÆA): *A. A. G., Dunbrae.* The green may be removed from the Althæa branches by dusting them when moist with freshly-slaked lime. A concentrated alkali wash is a splendid remedy, but this can only be used while growth is dormant. The stems and branches of Althæas are often infested with moss when planted in cold or indifferently drained ground, or under the shade and drip of trees. Althæas delight in rich soil and an open situation.

LANTANA SEED NOT GERMINATING: *Doubtful.* Lantana seed is somewhat difficult of germination; it needs considerable time, and requires bottom heat. You should not be impatient if germination does not occur before five to six weeks, even with bottom heat. Your seeds seem hard and well ripened. Lantana seeds seldom show more than 50 to 60 per cent. germination, and after such a season as that of 1912 it would probably be much less.

NAMES OF PLANTS: *E. B., Dorset.* 1. Dendrobium nobile. 2. Pieris (Andromeda) japonica. 3. Sciadopytis verticillata. 4. Polystichum pungens.—*R. A. B.* 1. Cochlioda vulcanica. 2. Dendrobium chrysotoxum. 3. Brassia verrucosa. 4. Sophronitis violacea.—*M. S. P.* 1 and 2. Cyclamen and Carnation, florists' varieties we cannot name. 3. Dendrobium chrysotoxum. 4. Violet Marie Louise. 5. Rhododendron (Azalea). 6. Selaginella variabilis. 7. Send when in flower.—"*Flower Spike.*" Coleus Mahonii, a native of East Tropical Africa.—*Charles Turc.* 1. Not found. 2. Skimmia japonica. 3. Ribes sanguineum.

PEACH FLOWERS DROPPING: *Nil Desperandum.* We suspect that the Peach flowers have dropped because they have not been fertilised. This season there has been a marked absence of insects, and unless the flowers were artificially pollinated fertilisation would not take place.

PEACH, SEA EAGLE: *A. G.* Unless we know more particulars it is impossible for us to determine what caused this late variety of Peach, which is growing with others in an unheated house, to expand its flowers earlier than the others, which are presumably earlier in ripening their fruits. We have grown Peach Sea Eagle in company with such varieties as Stirling Castle, Royal George and Dymond, and as a rule there was very little difference in the time of flowering, but Sea Eagle was always later than such early varieties as Alexander and Amsden June. You did not state what situation the tree occupies. Is it planted at the warmest end of the house?

PELARGONIUM LEAVES UNHEALTHY: *Advice.* The trouble is due to a disease for which there is no known cure.

POINSETTIAS TO FLOWER AT CHRISTMAS: *R. T.* The old plants that have been dried off should be started in a warm house at the end of April, and well syringed until the buds begin to develop, when the roots should be soaked thoroughly and watered with liquid manure. The cuttings should be ready for inserting at the third week in May. They should be made with a "heel" and placed singly in thumb pots filled with finely-sifted loam and sand in equal parts. Make the cuttings firm in the soil, and see that they rest firmly on the soil at the bottom of the hole made by the dibber. Place them under a bell-glass or small frame in a propagating pit, stove or Cucumber house, in gentle bottom heat, and shade from direct sunshine. After roots have formed, harden the plants gradually, and pot them singly into 4-in. pots. The night temperature of the house at this stage should be 60°. Syringe the plants both mornings and afternoons, closing the house after syringing in the afternoon, and admitting a little air through the top ventilators in the evening. For the final potting use 6-in. pots, employing a mixture of rich loam, a little leaf-mould, coarse sand, fine bones and decayed cow-manure as the rooting medium, and when the bracts show, the temperature may be reduced to 50° at night. Feed the plants when they are well established in their flowering pots, affording a top-dressing once a week of Clay's Fertiliser and soot mixed. The old stools that have furnished cuttings may be grown with success under the same treatment advised for the cuttings, retaining two or three of the best growths for flowering.

TOMATOS: *O. A. C.* Tomato canker is present. Spray the plants thoroughly twice a week with liver of sulphur, at the strength of 1 oz. in 3 gallons of water, until the disease disappears.

TULIPS DISEASED: *J. G. T.* The bulbs are destroyed by Sclerotinia, which was probably present last season.

VINE: *W. P.* You need not be alarmed at your Vines showing bunches, that is just what should happen with well-developed and well-ripened young canes. You have done quite right in removing the bunches from the leaders, but it is the custom of some cultivators to leave a bunch on one of the strongest laterals the year after planting, provided the cane is as large as one's little finger, and the bud which is to produce the lateral perfectly formed and so well ripened as to turn brown before the leaves fell. This would show that the embryo bunch contained in the eye was in a satisfactory condition. When the bud has not been perfectly formed and matured, the bunch produced is loose and straggling instead of compact, as on well-grown pot Vines. It is wrong to compare the Vine with the Chrysanthemum in the matter of flowering. The flower of the latter is formed at the apex of the shoot, and prevents any further leaf growth in that direction. The Vine, on the contrary, with very rare exceptions, produces its bunch opposite the fourth or fifth leaf of the lateral, which will grow to a length of several feet if not stopped.

VINES UNHEALTHY: *H. B. H.* No disease is present on the shoot sent for examination. The cause of the injury must be looked for in some wrong cultural treatment.

VIOLETS DISEASED: *A. W. S.* and *H. H. M., Wilts.* The disease is caused by a fungus—Ascochyta violæ. The plants should be transferred to a fresh portion of the garden after the diseased leaves have been removed, as the soil in which they are growing is certain to be infected with the spores of the disease.

WISTARIAS NOT FLOWERING: *A. B., Bedford.* The cultural detail which you describe is correct. The probable explanation of the failure of the forced Wistarias is that no flower buds formed last season.

Communications Received.—E. H.—A. S. W. C.—Belgique—C. M. M.—W. B. H.—C. L.—M. C. C.—G. A.—W. F.—Chloris—E. J. R.—V. J.—G. H. M.—F. R. W.—Nimbus—W. E. A.—S. C.—G. G.—F. D. and Co.—M. S. P.—I. I. E. K.—Nectarine—E. B., Dorset—E. T.—M. G.—B. and Sons—J. E.—Sir Trevor L.

THE
Gardeners' Chronicle

No. 1,370.—SATURDAY, March 29, 1913.

CONTENTS.

Alpine garden, the—
Spicate Campanulas 206
Alpine plants, distribution of 208
Books, notices of—
Engler's Syllabus ... 200
Flora of New Guinea 199
The Alpine Flora ... 200
Bougainvillea Sanderiana 204
Carnations, Perpetual-flowering, and Mendelism 209
Cyclamen, the culture of 209
Easter and Kew ... 205
Florists' flowers—
Perpetual-flowering Carnations 198
Schizocodon soldanelloides... 198
Foreign correspondence—
Corn Salad (Valerianella olitoria) ... 201
Some Rose novelties 201
Winter Purslane(Claytonia perfoliata) ... 201
Fruit-farming abroad... 204
Genetics, Report of the Fourth International Conference on ... 205
Hemsley, Mr. W. Botting, honour for ... 205
Heredity and mutation 200
Jam, the adulteration of 210
Kew notes 209
Law note 212
Market gardeners, new book for 205
Mazus rugosus 210
Obituary—
Heath, Francis George 212
Orphan Fund, Royal Gardeners' 205
Peach trees, the training of 209
Plants, new or noteworthy—
Populus Maximowiczii 198
Potato, the disguises of 205
Public parks and gardens—
Tree-felling and pruning 207
Puya chilensis 210
Romneya Coulteri at Glynllivon Gardens... 209
Roses, the foliage of, in spring 197
Senecio Ghiesbreghtii 210
Societies—
Edinburgh Garden and Nursery Workers' Union 211
Horticultural Club ... 206
Royal Horticultural 205, 211
Société Française d'Horticulture de Londres 205
South African Combretaceæ... 201
Timbers, brown and green oak 209
"Times" Iri-h number, the 205
Town-planning scheme and Kew Gardens ... 205
Trees and shrubs—
Escallonias 199
Trevethan House, incendiarism at.. ... 205
Veronica Traversii ... 210
Wasted energy 206
Week's work, the—
Apiary, the 203
"French" garden, the 203
Flower garden the ... 203
Fruits under glass ... 202
Kitchen garden, the... 203
Orchid houses, the ... 202
Plants under glass ... 202
Yorkshire gardens, changes in two ... 209

ILLUSTRATIONS.

Bougainvillea Sanderiana (coloured Supplementary Illustration)
Campanula spicata 207
Campanula thyrsoides 206
Cattleya Trianæ alba "Souvenir de Louis Verdonck" 199
Mazus rugosus 210
Populus Maximowiczii and P. suaveolens, foliage of ... 198
Primula Purdomii 200

THE FOLIAGE OF ROSES IN SPRING.

CLIMBING ROSES.

THE Climbing Roses of our gardens have of late years come into considerable prominence. Crimson Rambler and the hybrids of R. multiflora, closely followed as they were by Dorothy Perkins and the hybrids of R. Wichuraiana, created a new era in garden decoration. These Roses attained almost at once a popularity which they well deserved, and as a result increased attention was paid to Climbing Roses in general. We may well concede that the progress already achieved is very considerable, and yet the full effect and scope of these introductions are as yet but imperfectly perceived, and the future may have still greater gifts in store for us.

From the gardener's point of view Climbing Roses may be divided into autumnal-, which are more or less perpetual in the sense that they have two or more flowering periods, and summer-flowering Roses which, though some of them may give an occasional autumn blossom, have only one season in which the flowers are produced in any quantity.

The autumnals comprise a certain number of vigorous-growing Hybrid Teas, the Noisettes, the Pissardis, one or two Tea-scented Roses, Reine Olga de Wurtemburg, a hybrid from R. setigera, and some few hybrids from R. multiflora, which are only semi-climbers in habit.

In the summer-flowering group we get chiefly hybrids of R. moschata, of R. Wichuraiana, of R. multiflora, and a few briars. The summer-flowering group possesses some advantage over the autumnals in this respect, that though their period of flowering is not so prolonged, seldom lasting more than about 6 weeks, it is much more intense while it lasts, the plant making up as it were for lack of continuity by profusion during a limited flowering period.

Seeing, however, that, during some 10½ months out of the 12 which compose the year, the summer-flowering group has no flowers to attract the interest of the gardener, it is relatively of greater importance in their case that beauty of foliage should not be lacking, and, therefore, in making his selection of the varieties to obtain or retain in his garden, the rosarian will find that consideration of their quality of foliage is worth his attention.

Let us take first the Ramblers or hybrids of R. multiflora. In the typical Roses of this group, such as Crimson Rambler and Blush Rambler, bright green shoots begin to push early in February. They expand large, rather rugose leaves, which retain a good healthy colour throughout the season, at least if mildew be kept in check. The foliage is not in other respects specially noticeable, and falls earlier than that of most of the Wichuraiana family. There are three Roses, however, among the Rambler group which are specially noticeable for their beautiful foliage. In Tea Rambler the indica blood shows itself in the tips of the young foliage, which are tinged with red, and the same is the case with its seedling, the single-flowering Ariel. In both the spring foliage possesses considerable attraction, which lasts till the flowers come, for they are both early-flowering varieties. The third is American Pillar, and this perhaps possesses the finest foliage of the group. It is large, dense, and glossy, of a dark-green colour on the stems, and also on the laterals pushed out from the growths of the previous year; but in the strong root-shoots pushed up from the base of the plant we find a wonderful shade of shining, bronzy green, which is both distinct and beautiful, contrasting well with the dark-green foliage round it. It makes an excellent garden Rose, and has the merit of retaining its foliage into late autumn, longer than do most of the Rambler section.

The early foliage of Parkfeuer, a Rose brought out by P. Lambert in 1906, and said to be a hybrid of the Austrian briar, R. lutea, is also worth notice. The Rose throws up great long arching stems, which will grow 12 feet or more in a season, and carry spring foliage of a slightly glaucous tint tinged with red or pink.

The foliage of the hybrids of R. Wichuraiana is, on the whole, more persistent than that of the R. multiflora hybrids, and in mild winters some leaves may last till they are pushed off by the expanding leaf-buds of the following year, which buds in a mild winter begin to push out by the close of January, or soon after. There are several distinct types of foliage in this group. Bright green is the prevailing tint of the foliage of Roses in the Dorothy Perkins section, which includes the sports White Dorothy, Lady Godiva and Dorothy Dennison, also Evangeline, Minnehaha, Lady Gay, and many others. In R. Wichuraiana (type) Gerbe Rose and Léontine Gervais, the green is rather darker, and the surface is very shiny, while in Shower of Gold, Jersey Beauty, Albéric Barbier and Gardenia it is yet darker and nearly equally glossy. Finally, in those which appear to have much of indica in their constitutions—for example, Paul Transom and François Juranville—we find a larger or smaller amount of ruddy colouring in the spring leaves and growths.

In arranging the groups and positions of these Wichuraiana Roses in the garden it is quite worth while to bear in mind the different tinting of the foliage, so that where a contrast in foliage is thought to be effective it may be provided. Again, in planting two Roses for the purpose of covering an arch or other position where they will be likely to run one into the other, there is a considerable advantage at pruning time, at least if it is taken in hand early, before the leaves fall, in being able readily to separate the branches of the two varieties employed.

Turning to the Perpetual Climbers, so far as these consist of Hybrid Teas there is little to add to what has been said of the dwarf varieties. Perhaps the early spring foliage of Climbing Mrs. W. J. Grant is one of the best of the class, but the young shoots of Ards Rambler are a good colour, as are those of Climbing Papa Gontier when it is doing well. For the most part the foliage of the climbing sport differs little from that of the dwarf from which it came. The foliage of the pink Pissardi when young, as compared with the white variety, is stronger and darker, that of the white being nearly pure-green. The berries of these Roses are wonderfully persistent, often remaining on the plant till after the next flowering.

The foliage of the Noisettes is typically dark or darkish-green and very glossy. In the case of both L'Idéal and Wm. A. Richardson the foliage is worth notice, but there can be little doubt that the most noteworthy Rose in this group in the matter of foliage is Climbing Aimée Vibert. Fine, strong, deep-green and glossy, the foliage is at the same time wonderfully persistent, and forms later on a most admirable background for the bunches of white flowers. Of the perpetual Multifloras I can at present say little. I think that the only one which I grow as yet is Trier. It is sound and good, rather than specially remarkable in its early growths.

The Climbing Teas have often beautiful foliage. That of Mme. Jules Graveraux is a specially good red, while Papillon is also attractive and promising when the

foliage begins to push away in the spring time.

These notes are not meant to be exhaustive; but are intended merely to direct attention to the fact that in springtime the rosarian may have, beside the pleasures of hope, the enjoyment of a present beauty in the many tints of Rose foliage rivalling, if they do not exceed, in beauty and variety those which lend a charm to the Rose garden at the close of the year. *White Rose.*

NEW OR NOTEWORTHY PLANTS.

POPULUS MAXIMOWICZII.

In preparing my account of the genus Populus for the seventh volume of *Trees of Great Britain and Ireland*, which will shortly appear, I found that two Asiatic Balsam Poplars have been long confused under the name *Populus suaveolens*, Fischer.



Fig. 88.—POPULUS SUAVEOLENS, FISCHER.

Fischer founded his species* on P. *balsamifera*, Pallas, *Fl. Ross.* i. 67, t. xli. fig. 1, A and C (1784) (not Linnæus). These figures agree with a type specimen in the Kew herbarium labelled *P. suaveolens*, Fischer, which was collected in 1840 by Schrenk in Dzungaria. Fischer's description, though confused and possibly including two species, can be limited to the Siberian Balsam Poplar, which is characterised as follows:—Branchlets glabrous, except for slight pubescence above the nodes. Leaves ovate or ovate-lanceolate, 3 to 3½ inches long, 1¼ to 2 inches broad, acuminate at the apex, rounded at the base, glabrous on both surfaces. Capsule pubescent.

This Poplar is continental in its distribution, occurring as a small tree, rarely exceeding 50 feet in height, in central Siberia and Mongolia, extending as far east as the Yablonoi range; and becoming a low shrub in the upper regions of the Lena, Yenisei, and other Arctic rivers. It was introduced in 1834, but has never thriven in England, where I have seen no specimens except stunted shrubs at Kew.

The second species, which from an early date has been confused with the preceding, is a native of the Pacific coast of Asia, occurring in Kamtschatka, Saghalien, Amurland, Manchuria, Korea and Japan. I now name it *Populus Maximowiczii*,* in honour of the great Russian botanist, who added so much to our knowledge of the regions where this beautiful tree is a native.

It is characterised by densely pubescent branchlets and broadly oval or almost orbicular leaves, about 4 inches long and 3 to 3½ inches broad, cuspidate at the apex, subcordate at the base, pubescent on both surfaces; capsules glabrous. This Poplar, which attains 100 feet in height and 12 feet in girth in Japan, has apparently not been introduced. As it is a native of maritime regions, it would probably succeed well in this country as an ornamental tree. *A. Henry.*



Fig. 89.—POPULUS MAXIMOWICZII, HENRY.

* *Populus suaveolens*, Fischer, in *Allgem. Gartenzeit.* ix. 404 (1841), and *Bull. Sc. Ac. Imp. Petersb.* ix. 348 (1842). Fischer had cultivated plants in view when he described this species, which he affirmed to be identical with *Populus balsamifera*, Linnæus, vars. *intermedia* and *suaveolens*, Loudon, *Arb. et Frut. Brit.* iii. 1674 (1838). There is no doubt that Loudon's two varieties were the Siberian Balsam Poplar.

* *Populus Maximowiczii*, Henry, *nomen novum. Populus suaveolens*, Maximowicz, in *Bull. Soc. Nat. Mosc.* liv. 51 (1879) (not Fischer); Komarov, *Fl. Manshuriae*, ii. pt. i. p. 17 (1903). *Populus suaveolens*, var. *latifolia*, Regel, *Tent. Fl. Ussur.* 132 (1861). *Populus balsamifera*, Linnæus, var. *suaveolens*, Burkill, in *Journ. Linn. Soc.* (*Bot.*) xxvi. 535 (1899) (not Loudon); Shirasawa, *Icon. Ess. Forest. Japon.* i. t. 18, figs. 11-24 (1900). Arbor magna, incola Asiæ orientalis, in Manchuria, Korea, Japonia, Kamtschatka, Sachalinoque frequens; ramuli dense pubescentes; folia, 10-12 cm. longa, 7-9 cm. lata, e subcordata basi late ovata vel suborbiculata, cuspidata, utrimque pubescentes; capsulæ glabræ.

FLORISTS FLOWERS.

SCHIZOCODON SOLDANELLOIDES.

For the successful cultivation of Schizocodon soldanelloides, established plants should be purchased, and not those which have been newly imported. A specimen, however small, well established in a pot, is sure to succeed, if only the proper conditions are provided. It was in the late Mr. G. F. Wilson's garden at Wisley (now the R.H.S. Garden) that I first saw Schizocodon soldanelloides, growing in perfect health in the shade afforded by shrubs, but not immediately under them. Planted in cool peaty, sandy soil it was a delightful object with its lovely little evergreen leaves, which are beautifully tinted, and its exquisite, fringed, Soldanella-like flowers of bright rose colour. I afterwards succeeded in establishing a plant in a level, shaded part of my rock garden, where low shrubs screened it from the sun's rays. It was planted in peaty soil mixed with plenty of sand and surfaced with sand. The roots were never allowed to suffer from want of moisture, and the plant was for many years an object of great beauty. *S. Arnott, Dumfries.*

PERPETUAL FLOWERING CARNATIONS.

Being interested in the articles that have appeared in the *Gardeners' Chronicle* on perpetual flowering Carnations, I am sending you a few remarks detailing my own experience. Mr. J. Hart contributed a very interesting article to the issue for January 18 last; but of the methods of

propagation which he mentions, some are superseded in both private and trade establishments. I strike several thousand cuttings each year, and I have tried many methods, but by far the best is as follows: About the middle of December I have the bottoms of several hand-lights, 20 inches by 20 inches, placed over the hot-water pipes in the late vinery, and put slates or soft bricks to form a base. Into these we put about 3 inches of sand, making it very firm, and into each light I insert about 150 cuttings, giving them a good watering. We then place the tops on, but they are taken off each day for an hour. After about three weeks we gradually leave the lights off a little longer every day until they are removed altogether. I have by this means rooted 95 per cent. There are a few varieties which take longer than others to root. Triumph takes longer than any variety I have ever handled; whilst, on the other hand, R. F. Felton is one of the quickest. I prepare other and similar lights in an early vinery in January, and place another batch of cuttings in them. I have tried many other ways, insertion in pots and placing in the propagating pit, etc., but never with any real success. I do not consider a Carnation should ever have a bottom heat of more than 55° and a top temperature of more than 50°, unless caused by sun heat. I have proved beyond all doubt that a cutting pulled out at a joint will strike much quicker than one pulled off the old plant, as most growers used to recommend. Unless a cutting is very short I never put in one as pulled off the plant. We generally consider that after 4 to 5 weeks from the time of insertion the cuttings will be ready for putting into small pots. I have a place prepared for them close to the glass. The cuttings are carefully lifted and potted into 1½ or 2 inch pots in good sandy soil, never using any crocks in small pots. The young plants, if well rooted, will require no shading. Just a spray overhead the first few days is all they will require. These little pots should be well filled with roots in about 21 days.

Having grown nearly every known variety, I will give a list of what I consider the best varieties which may be useful to those who do not try the novelties each year. Carola and Triumph are the best crimsons, both English raised, and they easily lead the way. In whites White Wonder leads, but is closely followed by Wodenethe, Snowstorm, Marquis of Linlithgow and White Perfection. Every grower should watch Wodenethe with a keen eye; it promises well with me. In scarlets, Scarlet Glow is in front, but Britannia and Beacon are well worth growing. Keep a sharp eye on St. Nicholas. In blush colours, Lady Meyer is excellent, but Enchantress and Mrs. C. Knopt are well worth growing. In pinks (light), Gloriosa must lead, although we have some other grand novelties coming on. In deeper pinks, Washington is the best, and in the Lawson colour, Rosette will take the lead, but Mrs. Ward is also a grand Carnation. In the salmon pinks, Lady Northcliffe now stands first, although May Day and Pink Delight are good varieties. In other selfs I like Mikado—when in good form still the best; but The Geisha is a much stronger grower. Rose Doré is worth a place in all collections. In fancies, the best are Benoni, Wivelsfield Wonder and Orpheus. Sunstar is a lovely Carnation, but hardly free enough in winter. The following varieties are superseded, and hardly worth a place now in an up-to-date collection: Mrs. Burnett, Jessica, Rose Pink Enchantress, Lady Bountiful; all the crimsons and all red varieties except those mentioned. In novelties there are some fine things. Mary Allwood is a grand variety, one of the best ever raised in the British Isles. Mrs. A. F. Dutton is also a fine variety, a lovely pink sport from that old favourite White Perfection. Salmon Enchantress I want to see more of before I say anything about it. Lucy is a variety of which I expect to hear more. White Chief may be good, but it is a case of "wait and see." William Eccles is spoken well of in the States, as is also Northport. The latter I have seen in good form. Baroness de Brienen, sent out at rather a high price last year, ought, perhaps, to be called a 1913 novelty. It is not very free, but is otherwise a fine variety. *A. E. Usher, Ranston Gardens, Blandfort.*

TREES AND SHRUBS.

ESCALLONIAS.

These beautiful summer-flowering shrubs are often sadly neglected. The old favourite, E. macrantha, is, however, sometimes used for hedges in warm localities, especially in Guernsey and in the western counties of the British Isles, where it makes excellent wind screens. pletely clothe the plant. It grows freely, and often assumes large proportions—8 to 10 feet high.

These Escallonias may be propagated from cuttings inserted during September, and they will soon become good-sized plants. *W. A. Cook, Leonardslee Gardens.*

NOTICES OF BOOKS.

The Flora of New Guinea.*

The contents of previous parts of the botany of Dr. Lorentz's expedition to New Guinea have been recorded in the *Gardeners' Chronicle* (see February 26, 1910, p. 136, and April 27, 1912, p. 275) and some of the specially interesting plants briefly described. As previously noted, the families are not dealt with in systematic order, and the present part contains additions to families already elaborated. This is explained by the fact that there were actually two expeditions: one in 1907 and the other in 1909. Plants belonging to 70 different families are described or enumerated in part iv.; but of these 70 families 20 are represented by a single species each, and 10 others by only two species each. Chief among the families or groups more numerously represented are the Musci, Filices, Cyperaceæ, Euphorbiaceæ, and Ericaceæ. There are some interesting additions to what may be termed the Australasian-American element from the mountains, namely, three species of Drimys (Magnoliaceæ) and several Cunoniaceæ, including a species of Spiræanthemum, a genus previously only known to be represented in Australia, New Caledonia, the Fiji and Samoa islands. Of the Rubiaceæ four species of Amaracarpus are



Fig. 90.—Cattleya trianæ alba "Souvenir de Louis Verdonck." Flowers white.
(R.H.S. Award of Merit on March 18, 1913. See Report on p. 193.)

* *Résultats de l'Expédition Scientifique Néerlandaise à la Nouvelle Guinée en* 1907 *et* 1909 *sous les auspices de Dr. H. A. Lorentz.* Vol. viii. Botanique, livraison 4. pp. 611-898 et 113-159. (Leyden, 1912: E. J. Brill.)

figured. Until comparatively recently this genus was regarded as a monotype, endemic in Java. Now nine species are recorded from New Guinea, and one or more from the Celebes. But what is more surprising, the original species, A. pubescens, was lately discovered in Mahé, Seychelles, by the Hon. H. P. Thomasset. Unfortunately the specimens were described by the writer as the type of a new genus, Neoschimpera in Hooker's *Icones Plantarum*, t. 2,810. There are also several new species of the ant-loving plants, notably Hydnophytum grandifolium, with leaves 9 inches long by 6 inches broad. Capitularia is a new genus of Cyperaceæ, distinguished by having a small head of flowers seated in an involucre of about seven linear reflexed bracts, about a foot long, and Nouhuysia is a new genus of Guttiferæ, near Calophyllum. Several new Rhododendrons are figured. R. Devrieseanum has beautiful white flowers, remarkable for the narrow corolla-tube, abruptly expanded into a broad-spreading limb, resembling a Gardenia. R. Hellwiggii is another white-flowered species. In this the corolla-tube is club-shaped, about 3½ inches long and about a third of an inch wide in the thickest part, and the limb about an inch in diameter. Of the Epacridaceæ, several species of Styphelia (including Leucopogon) are described and a synopsis is given of the Epacridaceæ of New Guinea and the Malayan Archipelago. Altogether, it may be said that there is no very striking novelty described. A new species of the singular parasitic Polygalaceous genus Epirrhizanthes terminates part iv. of this work. It is a delicate little herb with violet stems and very small, white flowers. *W. B. H.*



FIG. 91.—PRIMULA PURDOMII: A NEW CHINESE SPECIES. FLOWERS A SHADE OF VIOLET-PURPLE.
(R.H.S. First Class Certificate, March 18, 1913. See Report on page 192.)

THE ALPINE FLORA.*

THIS book is a somewhat enlarged edition in English of the well-known French work by the authors which appeared about six years ago. M. Correvon is a well-known authority on the Alpine flora, as readers of *The Gardeners' Chronicle* are already well aware, for many articles from his pen have appeared in its pages.

The work is not a flora in the ordinary sense of the term, but it contains descriptions of a very large proportion of the plants that are worth cultivating. What is even of greater importance, there are fairly full directions as to how the different kinds, especially the more "difficult" species, may be cultivated with a chance of success. If for no other reason, the book is to be strongly commended to all growers of Alpines, though in our climate it is not unlikely that treatment which succeeds so well in the author's interesting garden at Floraire may not always answer equally here.

Some space in the book is devoted to a sketch of well-known English rock-gardens, as well as to those of Switzerland, where M. Correvon was a pioneer in the introduction of Alpines to the horticultural public.

About half the volume is given up to coloured plates of Alpine and Sub-Alpine plants. They are remarkably decorative, and though often, perhaps, a little stiff, manage to convey a very good impression of the plants. The form of the illustrations as coloured panels on which the flowers themselves are painted gives an unusual and striking effect to the whole. Some plants, of course, lend themselves better to this mode of treatment than others, and as an example of specially successful work, the plate 77 of Cyclamen Europæum may be cited, while that of Erinus alpinus on plate 87 strikes us as deficient in quality.

With so many plates on heavily charged paper, the volume is a heavy one for its size, but this matters the less as it is not one that would find a place in the rücksac. It is essentially a work to have at home, and it may be warmly commended, in spite of its rather high price, to all lovers of Alpine plants. *J. B. F.*

* *The Alpine Flora.* By Henry Correvon and Philippe Robert. Translated by E. W. Clayforth, with 180 reproductions of studies in water-colour. (London: Methuen and Co.) Price 16s. net.

ENGLER'S SYLLABUS.*

SERIOUS students of systematic botany are familiar with the admirable work known as Engler's Syllabus. Although the name implies a list of plants, the book is far more than a classified enumeration of the species of the vegetable kingdom. Indeed, it might best be described as an outline monograph of that kingdom.

The new edition of this well-known work is considerably larger than that which it succeeds, and contains several noteworthy improvements. In the first place the number of illustrations has been increased so greatly that the work has become an illustrated handbook of all classes of plants. The illustrations of the Fungi are not only very numerous, but, gleaned as they are from many sources, are among the best ever brought together in any volume not devoted solely to that group of plants.

Another innovation is the care with which plant-products, medicinal and officinal, have been assigned to the species from which they are obtained.

Lastly, the extreme abbreviation of many terms which was practised in the earlier edition has been discarded, so that the meaning of the terms is rendered more evident.

The work, which is in German, reflects the greatest credit not only on Dr. Engler and his colleague, Dr. Gilg, but also on the publishers, Gebrüder Borntraeger, of Berlin. We may affirm, without fear of contradiction, that no English publisher would undertake to bring out such a volume as this, technical, well printed, and copiously illustrated, at the price of 6 Marks 80 Pfennig.

* *Syllabus der Pflanzenfamilien.* By D. A. Engler, assisted by Dr. E. Gilg. Pp. 385, with 457 illustrations. Berlin: Gebrüder Borntraeger.) Price Marks 6.80.

HEREDITY AND MUTATION.

IN his fifth lecture at the Royal College of Science Dr. Gates described the mutations obtained by Tower in various species of potato beetle (Leptinotarsa), and also those discovered by Morgan in the vinegar fly (Drosophila ampelophila). The eyes are normally red, and mutations were obtained by the successive dropping out of factors, giving races with pink, vermilion, orange, and "eosin" eyes. Four mutations in body colour, and no less than nine in wing characters, appeared.

The experiments of Blaringhem in producing mutations in maize as a result of mutilations or traumatisms were referred to; also the work of Klebs, who in certain cases obtained new types, which bred true, by subjecting species of Sempervivum to light of various colours.

Regarding the causes of mutations, it is evident that the germ plasm, like all protoplasm, is responsive to stimuli, so that various environmental changes may induce mutations, but it is probable that, for the germ cells to be affected, the stimuli must be applied at the time when they are maturing.

Nothing is yet known concerning the cause of "spontaneous" mutations in pure lines. In

Oenothera the chromosome distributions are evidently concerned in the origin of various forms, and the condition of germinal instability which exists in O. Lamarckiana and other Oenotheras has probably been induced by previous crossing. When it becomes possible to control the production of mutations, we shall have made an advance of great practical value in plant and animal breeding. The first step to this is a knowledge of the causes of mutations and the nature of the germinal change which occurs when any mutation originates.

THE SOUTH AFRICAN COMBRETACEÆ.

(*Continued from p.* 183.)

19.—C. TRANSVAALENSE, *Schinz* in *Bull. Herb. Boissier*, II. (1894), 202.

A divaricately-branched shrub or small tree, 3 m. high; the second and third-year branchlets terete, dirty-brown or ashy-grey, with prominent circular leaf-scars, stringy-barked, sparingly lepidote and finely pubescent, the ultimate twigs very short, slightly angular and densely greyish or brownish tomentellous and leafy; leaves opposite or alternate ascending and imbricate or spreading shortly petiolate, the petiole densely pubescent or eventually glabrous, 2 to 5 mm. long; blade oblong or obovate with a rounded often distinctly apiculate apex (rarely deeply emarginate), the base invariably rounded, 2 to 3.5 cm. long, about 1 cm. broad, coriaceous, prominently reticulated, densely yellowish lepidote and sparingly pubescent on the lower surface (glaucescent), faintly lepidote and almost glabrous on the upper surface; margin plane or slightly undulate. Spike axillary or adventitious, solitary, cylindric, densely-flowered, 3 to 3.5 cm. long, 2 cm. broad, the axis with the minute bracteoles and bases of the receptacles, yellow-tomentellous. Flowers dirty brown. Receptacle 5 mm. long, 4 mm. broad, pilose and lepidote without, conic at the base, campaniform above; disc cup-shaped, with a very pilose margin. Calyx segments, five; obtusely deltoid, ciliolate. Petals clawed, 1.2 mm. long, 2 mm. broad; limb broadly elliptic, involute, slightly denticulate above. Stamens, 10; glabrous, 3 to 4 mm. long. Style glabrous, equalling the stamens; stigma simple. Fruit, four-winged, ovate, rounded, and occasionally slightly emarginate at the apex, truncate, and deeply emarginate at the base, averaging 2.5 cm. long, 2 cm. broad, densely ochreous or madder-brown, thickly lepidote, the wings transversely striate, 5 to 7 mm. broad, undulate; pedicel thickly lepidote, 5 to 8 mm. long.

C. porphyro'epis, Engler and Diels in *Engler's Monograph Afrik Pfl. Fam.*, iii (Combret.), 63 (1899), in part. Burtt-Davy in *Transvaal Agric. Jour.*, v, 424 (1906-07).

Kalahari Region.—Transvaal Streyd Poort, Inkumpi River, near Zebedeter Kraal, Aug., 1880, Nelson, 366 (fruit. spec.). Hillsides, Queen's River Valley, Barberton, Sept.-Oct., 1889, 690 m., Galpin, 560 (flow. spec.), Jan., 1890, 600-750 m., Galpin, 756 (immature fruit. spec.). Barberton, Thorncroft (*Herb. Mus. Brit.*). Komati Poort, 300 m., Dec., 1897, Schlechter, 11,772 (immature fruit. spec.). Engler and Diels (l.c. 64) quote also Makapansberge at Streyd Poort, Rehmann, 5470 (*Herb. Zürich*), and Galpin, 561, which latter number, however, at Kew, represents a wholly distinct plant, easily distinguished by the shorter spikes, smaller flowers, shorter and yellowish staminal filaments, but in the absence of leaves and fruit it does not appear expedient to apply a name to it. Schinz's name must be adopted, as it antedates C. porphyrolepis, Engler and Diels, based also upon Rehmann's specimen, No. 5470.

VAR. BOLUSII, Dümmer, var. nov.

Leaves often broadly obcordate, with the pubescence often persisting on both sides of the midrib. Fruit oval, rounded above, subcordate at the base, averaging 2 cm. long, 1.7 to 2 cm. broad, the body dark-brown with a glaucous tint.

Kalahari Region.—Transvaal, on the banks of the Kaap River, near Barberton, 360 m., Sept., 1886, Bolus, *Herb. Kew*, 7763 (fruit. spec.).

VAR. OCHREO-LEPIDOTUM, Dümmer, var. nov.

Leaves as in the type, but distinctly ochro-lepidote on both surfaces.

Transvaal, Leeuw Spruit Barberton, 225-900 m., Sept., 1886, Bolus, 7769 (7768?) (flow. and fruit. spec.).

The immature nature of the specimen (No. 7768) renders its provisional identification subject to criticism.

A peculiarly characteristic plant, easily recognised by the small glaucescent leaves, and the almost distichous disposition of the very short flowering and fruiting twigs, which individually invariably bear one to four of the conspicuously coloured winged fruits, though these in many cases are sterile.

Burtt-Davy mentions (l.c.) that the species is known in the Transvaal as "Leadwood"—"Lodhout" (Dutch)—and by the aboriginals as "im-Pondo-in-Dhlovu," and that it occurs commonly in the east and west of that region, forming a constituent of the Middle and Low Veld Savannah.

20.—C. HEREROENSE VAR. VILLOSISSIMUM, *Engler* and *Diels* in Engler's *Mon. Afrik. Pfl.-Fam.* iii, 63, t. xix. f.G

A much-branched, xerophytic shrub; lateral twigs short, 1.2 to 3 cm. long, teretish, densely and greyish tomentellous. Leaves small, subopposite, longer than the internodes; petiole subterete, brownish, tomentellous, 1 to 2 mm. long; leaf-blade elliptic, oval or obovate, rounded at both ends, mucronate at the apex (rarely emarginate), 1.4 to 2.5 cm. long, 1 to 1.7 cm. broad, thickly coriaceous, tomentellous on both sides, glaucescent above, rusty and lepidote below, with a prominent midrib, and accompanied by four to six pairs of lateral veins and reticulations; margin slightly recurved and ciliate. Spikes short, 1.5 cm. long, 7 mm. broad; peduncle 6 mm., the whole inflorescence rusty-tomentellous. Flowers sessile; bracts lanceolate, slightly exceeding the shortly ovoid lower half of the receptacle. Receptacle 4.2 mm. long, the upper half infundibuliform-campanulate, 2.5 mm. in diameter, pubescent within; disc shallowly cup-shaped, the margin with long hairs; calyx segments deltoid, acute, ciliolate. Petals clawed, inversely deltoid, 1.5 to 2 mm. long, glabrous; the limb subreniform, yellowish, 2 mm. broad. Stamens 5 mm. long, glabrous. Style stoutly subulate, shorter than the stamens, glabrous; stigma obtuse. Fruit pedicellate, four-winged, oval, emarginate at both ends, especially the base, 1.8 to 2.3 cm. long, 1.5 to 2 cm. broad, the body sparingly pubescent and thickly madder-brown lepidote, the wings glabrous, paler, 5 to 6 mm. broad; pedicel 4 to 6 mm. long, sparsely pubescent, thickly lepidote.

Burtt-Davy in *Transvaal Agric. Jour.*, v (1906-07), 424.

Kalahari Region.—Transvaal, Makapansberge, Streydpoort, Rehmann, *Herb. Zürich*, 5471 (fruit. spec.). Shrubby places near Potgieter's Rust, Pietersburg, 1080 m., Feb., 1904, Bolus, 11,017 (fruit. spec.). Bechuanaland, Hus Hills, Banguaketse country, lat. 25 deg. S., long. 25 deg. 40 min. E., Dr. Emil Holub, *Herb. Kew* (fruit., spec.).

The type occurs in North Hereroland, German South-West Africa, where it was discovered by Dr. Schinz at Otjovazandu in the flowering stage in August, 1885. In its persistent leaf-indumentum and the prominent reticulations on the under surfaces of the leaves, and puberulous body of the fruit, this variety exhibits a distant affinity to C. holosericeum, Sond. The specimen of Bolus was distributed under C. porphyrolepis, Engl. and Diels, to which the variety bears a distinct resemblance. *R. A. Dümmer.*

(*To be concluded.*)

FOREIGN CORRESPONDENCE.

WINTER PURSLANE (CLAYTONIA PERFOLIATA).

SPINACH is in season throughout the year, and a constant supply is maintained in most gardens, but occasionally the demand exceeds the supply, and a good substitute would receive a warm welcome. Claytonia is not nearly so well known in England as its merits would deserve, and it is difficult to account for its want of popularity. A sowing made about the middle of September in a cold frame will yield a plentiful harvest, and will be found a good substitute for spinach. It will be ready for cutting before the winter has fairly set in, and the supply will continue until the summer Purslane (Portulacca oleracea) takes its place. A great advantage of the Winter Purslane lies in the fact that it can be cut over and over again from the same sowing, thus supplying a very large quantity in proportion to the amount of seed originally used. If well cooked it can scarcely be distinguished from Spinach in appearance, and the taste, although somewhat different, is equally agreeable. Where it is well known it is always highly appreciated, and I venture to suggest that it is a great acquisition in a garden where the supply of vegetables is expected to be a constant one, even if only used when the Spinach has, for some reason, failed.

CORN SALAD (VALERIANELLA OLITORIA).

THIS plant is a useful winter salad material. Its culture is not generally understood, especially in England. On the Continent it is freely used, and has become almost a necessity. Several varieties are cultivated, in one of which the foliage is of a yellow colour, which adds considerably to the attractive appearance of the salad. Seed is usually sown in the early autumn, and the plant comes into use at the beginning of winter. With successional sowings it continues without a break until April, when it is no longer needed. Another method is to sow the seeds broadcast in a cold frame. Several frames can be used in succession, and a constant supply under cover is thus assured. When grown in this way the leaves are more tender and succulent than in the open. The cutting may be done with a knife, as in the case of Mustard and Cress. The Continental seed is probably superior to the English, as the plants receive more care and attention, being so much more in request. It may not be easy to create a demand for this salad, in spite of its merits, for conservatism clings to old articles of diet and refuses what is new because it is unknown. *H. Rabjohn, Twickel Gardens, Holland.*

SOME ROSE NOVELTIES.

Two new Roses which M. Pernet Ducher is distributing are worth serious attention. One—Willowmere—is of the Lyons Rose type, but the constitution of the plant is much hardier, and the flowers are of a lovely shape. The other is Cissie Easlea, of the Pernetiana race. The colour is saffron-yellow with carmine centre, passing to Naples yellow. When expanded the foliage is most remarkable, reminding one almost of Camellia leaves. The plant is stated to be one of the best "doers" in cultivation, both out-of-doors and under glass. I hear a good account of a Yellow Frau Karl Druschki, which is grown in Australia, and which has taken several prizes. My informant tells me it is not the same Rose as Natalie Böttner. This latter is a very pale lemon colour, and although the shade is good, it is certainly not yellow. Those who force Roses are still on the look out for a good crimson variety to supplant Richmond. A grower informed me recently he possesses a sport of this variety that possesses many more petals than the type, and as the same sport has appeared also in America we may expect an improved Richmond. Two beautifully coloured novelties are found in Old Gold and Mme. Edouard Herriot. The former Messrs. S. McGredy and Son will send out next June, but the latter will not be available from M. Pernet Ducher until next autumn.

We may expect to see many of these fine novelties at the National Rose Society's Exhibition on May 1. Messrs. Cocker and Sons' fine white seedling of Mrs. Andrew Carnegie, which obtained such signal success last season, is admitted by all experts to be an acquisition. *E.*

The Week's Work.

PLANTS UNDER GLASS.

By F. JENNINGS, Gardener to the DUKE OF DEVONSHIRE, Chatsworth, Derbyshire.

VALLOTA.—Plants of Vallota purpurea should be examined to see that the drainage is in an efficient condition. If the soil is in good order the roots should receive no further disturbance. Such plants may later be fed with liquid manure and receive a top-dressing of rich loam, leaf-mould, and decayed cow manure.

SALVIA SPLENDENS GRANDIFLORA.—Cuttings of this winter-flowering plant should be obtained from specimens that were cut back last autumn. Insert the cuttings in finely-sifted, sandy soil under a close frame or handlight provided with mild bottom heat. A batch of plants may also be raised from seeds, for seedlings, as a rule, are more vigorous than those propagated from cuttings.

CHRYSANTHEMUMS.—Plants intended for purposes of exhibition should be potted, taking care not to use receptacles of too large a size. A batch of cuttings may be inserted to raise plants for flowering in 4½-inch pots next autumn. The cuttings may be taken from plants that have already furnished cuttings for the main batch. The varieties for this purpose should be those that throw up strong, erect spikes, such as White Caprice de Printemps. Insert three cuttings around the edge of each 3-inch pot. After the plants are rooted they should be hardened preparatory to placing them in a cold frame. They should be stood as near to the roof glass as possible, and the leading growth stopped when plenty of roots are formed.

TREE CARNATIONS.—Where room is limited in the glass-houses it is a good plan to devote one structure entirely to these plants, and to grow them on benches. This system not only obviates the necessity of potting the plants, but also the rooting of fresh cuttings every year, for the plants will give satisfactory results during two seasons. The cuttings should be rooted during the autumn after the plant's second season, and it is here that the bench system has its disadvantage, for time is lost in the spring of the third year, when the old plants have been removed, and the young ones set in their place. For this reason, where house-room and labour are plentiful, it is an advantage to grow a batch in pots. If the bench system is decided upon choose a light, airy house. The bench should be bounded by a brick wall, or failing that by a partition made of boards. The space inside should be filled with such materials as clinkers, brickbats, or broken flower-pots. On the top of this material place drain-pipes of a diameter of two or three inches, keeping the pipes in a straight row with the end one resting on the edge of the wall. A stout plank 11 inches wide should be fixed on its side to form the outer boundary of the bed. Cover the drainpipes with turves, and then place a layer, about 9 inches deep, of soil composed of three-parts chopped loam, and the remainder leaf-mould, wood-ashes, coarse sand, well-decayed cow dung, soot, and mortar rubble. The soil should be placed moderately firm, and the Carnations planted at distances according to the habit of the varieties. The roots should be well watered and the foliage syringed on mornings and afternoons, to destroy red spider. If the house has a span roof, a bench may be erected along the middle as well as on either side. It will save time in training the plants if wires are stretched from one end of the house to the other and across the bench to form squares, securing one plant with string in each of the squares. Specimens in 4½-inch pots make the best plants for growing in benches. It is an advantage to sterilise the soil, in order to destroy any wire-worm that may be present. If this is not done place pieces of carrot about the bed as traps. A return and flow hot-water pipe running around the roof of the house is a decided advantage in growing Carnations.

FRUITS UNDER GLASS.

By JAMES WHYTOCK, Gardener to the Duke of BUCCLEUCH, Dalkeith Palace, Midlothian.

EARLY PEACH HOUSE.—The earliest trees of Peaches and Nectarines being now at the stoning stage, on mild nights and during bright weather a minimum atmospheric temperature of 60° may be maintained, allowing a rise of 10° or 15° during the day. But in cold weather 5° less is preferable. Do not neglect to close the house early in the afternoon, enclosing plenty of sun heat, as this enables the cultivator to manage with less fire-heat during the early hours of the night. Peaches are very subject to red spider, and especially trees which are forced early in the season, therefore do not neglect to syringe them twice each day. The morning syringing should be carried out early, and if soft water is used and a little approved insecticide added to it, this practice may be recommended provided the mixture is not too strong. Such syringing may be continued until the fruits begin to ripen. The final thinning must not be carried out until the stoning stage is passed, when it will have to be determined exactly what crop to leave upon each tree. This is not exactly a matter of arithmetic, but each tree should be studied separately, remembering that a weak tree cannot produce so heavy a crop as a stronger-growing healthy tree; nor can trees growing upon light soil bear, as a rule, such heavy crops as trees having their roots in a staple of more holding character. In the case of fully-grown trees bearing heavy crops manure water may be given freely after the stoning period until the fruit ripens, when the border should be afforded a mulch and water withheld until the crop has been gathered. Young trees in vigorous growth do not require manure water. Regulate the shoots carefully, and do not train in a sufficient number to cause overcrowding. Any shoots which appear excessively strong should be pinched, or even removed altogether, in order that the weaker ones may have the better chance.

SUCCESSION PEACH HOUSES.—In succession houses where the trees have set their fruit, the work of disbudding and thinning of the fruits will need attention. During mild weather an atmospheric temperature of 60° may be maintained, closing the house early in the afternoon with bright sunshine at a temperature of 75°. Give the trees a good syringing morning and afternoon. Trees in later houses, in which there is no heating apparatus, are now coming into flower. Whilst it is desirable to keep the air in circulation in such houses, care must be taken at the same time to exclude frost and cold winds. Let the pollination of the flowers be attended to daily, and afford sufficient surface moisture to keep the atmosphere in a healthy condition.

FIGS.—The latter part of March or the beginning of April is a good time to make a plantation of young Fig trees. These, if planted in heavy loam, are apt to grow excessively strong, and therefore become unfruitful. A better compost is one consisting of two parts loam (rather of a light than heavy nature) and one part lime-rubble. These materials should be in a fairly dry condition, and after being mixed together the compost should be formed into a border. No manure should be added; the border should be about 20 inches deep, 2 feet or 2½ feet in width, and very perfectly drained. For planting such a border it is best to select trees that have been grown in pots of moderate size, and that are well rooted; shake the soil entirely from the roots, and in spreading these out cut back some of the thicker ones, which bear few or no fibres. The remaining roots should be covered 3 or 4 inches deep. No water need be applied until the trees have begun to grow freely, and after that time watering should be moderate in order to produce fruitfulness. The atmospheric temperature should be 55°, rising 10° or 15° with sunshine. After the trees have commenced to grow the night temperature may be increased to 60°, or even 65°, varying according to the weather, and allowing corresponding increases during the day. Syringe the trees, both morning and afternoon, on bright days, and maintain the atmosphere moist as a prevention of red spider. The air must be made to circulate each day. In order to make the best use of a newly-planted Fig house, a number of fruiting Figs in pots should be cultivated in the same house. In gardens where Figs are forced early, whether in pots or planted out, the fruits will now have set and be in course of the final swelling. In such houses the temperature should be 65° to 70° at night, and 75° to 80° during the day. Continue to syringe the foliage frequently and vigorously until the fruits commence to ripen. If the border requires moisture and it is well drained and moderately well filled with roots liberal waterings may be given, employing weak manure water at every alternate watering. Avoid extremes both in dryness and over saturation, as these extremes have the effect of causing the fruits to split.

THE ORCHID HOUSES.

By W. H. WHITE, Grower to Sir TREVOR LAWRENCE, Bart., Burford, Dorking.

ANGRÆCUM FALCATUM AND AERIDES JAPONICUM. — Plants of Angræcum falcatum and Aërides japonicum that have been wintered in the intermediate house may be removed to the warmer part of the Odontoglossum house. Both species grow best when suspended near to the roof glass.

SARCOCHILUS.—S. Hartmannii and S. Fitzgeraldii, both Australian species, are in bloom. They grow best when suspended from the roof of the cool house. They root freely in a well-drained, shallow compost of Sphagnum-moss, and delight in copious waterings the whole year round.

NANODES MEDUSÆ. — The curious-flowering Nanodes Medusæ has commenced to grow, and the roots should receive liberal and frequent waterings. It is a difficult subject to import, but well-rooted plants grown in a porous mixture of Osmunda-fibre and Sphagnum-moss kept constantly cool and moist succeed and flower freely. The flowers are produced from the ends of the leafy growths, and as their full beauty is only seen when looking through them towards a strong light, the plant should be suspended near to the roof-glass.

ODONTOGLOSSUM. — The present is a suitable time to afford increased root-room to cool Orchids which are not flowering, but Odontoglossums should not be disturbed unless repotting is absolutely necessary. Plants which have new growths quite or nearly on the edge of the pots should be turned out of their receptacles, all useless back pseudo-bulbs removed, and as much of the back part of the soil taken away as is possible. They may then be easily placed in larger pots with but little disturbance of the roots. The material for potting should consist of a mixture of Osmunda-fibre, A1 fibre, and Sphagnum-moss in equal parts, with a moderate quantity of small crocks added. The pots should be well drained, for although Odontoglossums of the O. crispum type and their hybrids require plenty of water whilst in full growth, a stagnant soil is harmful. After repotting, afford water with great care, for an excess of moisture will cause the old roots to perish, and the pseudo-bulbs to shrivel. One copious watering will suffice; afterwards, only just enough moisture should be given to keep the moss on the surface healthy. When the plants are in full growth, and roots are plentiful, copious waterings are necessary, and especially when the new pseudo-bulbs commence to form. At the present time many of the older established plants are at their flowering season, during which time it is not wise to disturb the roots. Such plants are best repotted later, when the new growths are sufficiently far advanced. All Odontoglossums that have sufficient root-room should not be disturbed before the coming autumn.

ONCIDIUM.—The pretty yellow-flowered Oncidium cheirophorum should if necessary be afforded fresh potting materials. Suspend the plants from the roof of the cool house. Exceptional care is necessary in watering this plant, as the young growths are very liable to damp off if water lodges in them. Oncidium tigrinum, now at rest in the cool house, should be kept on the dry side, but not so dry as to cause the pseudo-bulbs to shrivel.

THE "FRENCH" GARDEN.

By Paul Aquatias.

Hot-Beds.—The Lettuces may be removed from the frames and, after their removal, the Carrots weeded carefully. Cover the collars of the Carrots with fine soil to prevent them from turning green later. This crop requires ventilation daily and even at night in favourable weather. As there is very little danger of frost just now, the mats may be removed from the paths. Thin the Turnips, leaving only one plant to each station. Where the seeds have failed to germinate, make a fresh sowing to replace them. Ample ventilation should be afforded; in bright weather open a light at the top and the next one at the bottom to establish a circulation of the air, but in windy or stormy weather open the lights on the side opposite to that from which the wind is blowing.

Hot-Bed for Cloches.—The "Little Gott" Lettuces are "hearting" fast, and will furnish a succession to the Lettuces grown in frames. The Cos Lettuces have grown near to the top of the glass, and great attention must be paid to shading. It is too early in the season to whitewash the cloches, though this method is often resorted to when a great number are in use; shading with mats is preferable, as the plants have the benefit of the light in dull weather.

Unheated Frames.—The growth of the Lettuces will be greatly favoured if the Radishes are removed at an early date, especially where the variety "Passion" is grown. This sort requires ventilation both day and night at this stage. The quick changes in the temperature compel the grower to spend much time over the ventilation of the different crops, yet it is essential, for unsatisfactory results are often due to faulty ventilation at this time of the year. Lettuce Little Gott requires special care in airing, as it is very liable to suffer a check, which will not be apparent until about the 10th of April, when it will be seen that the leaves are covered with spots.

Melons.—Plants of the first batch of Melons raised from seeds sown early in February are ready for their first stopping with a sharp knife. The main stem should be cut across at the base of the third leaf. Remove the cotyledons close to the stem, taking care to cut at the same time the bud at the base of each cotyledon. This operation is always best done early on a bright day to allow time for the wounds to dry before night arrives. Plants of the later batches should be potted as soon as the cotyledons are well spread. Plunge the pots in a newly-made hot-bed, as the plants would grow soft and spindly in a greenhouse. The amount of ventilation may be increased to 2 or 3 hours daily during warm weather; when the sun is shining brightly it may be necessary to shade the plants by spreading short manure over the light.

Nursery Beds.—Make the main sowing of Celery (red variety) on a hot-bed. The first sowings have germinated and ventilation may be afforded in moderation; it is essential that the plants receive no check, or they will be liable to run prematurely to seed during the summer. Vegetable Marrows raised from seeds sown last month should be potted into 4½-inch pots. It will be an advantage to plunge the pots for 8 or 10 days in a spent melon bed, after which the plants may be hardened off and placed in a cold frame. The seedling Tomatos are all pricked out, and air can be afforded daily to promote a sturdy vegetation. Preparations will have to be made shortly for transplanting them a second time, 100 per light. Tomatos grown in frames have a tendency to become sappy; because of this, watering should be done with moderation and only when moisture is absolutely necessary.

Outside Crops.—All the kinds of Lettuces are planted and Cauliflowers will be set amongst them, at 18 inches apart in the row, and 2 feet between the rows. The earliest Turnips may be sown outside in very fine soil, mulched heavily with black soil. The best varieties are "The Hammer Strain" and "The Snowball." Should germination be defective or very slow, or the first leaf grow narrow and appear very clear green, the crop should be hoed up and a fresh sowing made.

THE FLOWER GARDEN.

By Edward Harriss, Gardener to Lady Wantage, Lockinge, Berkshire

The Herbaceous Border.—Border Phloxes have commenced to grow unusually early this season, and before the shoots exhaust too much of the energy of the plant let them be thinned, leaving only sufficient for flowering. The shoots will provide suitable cuttings for increasing the stock if it is desired. Fill pots with sandy compost, insert the cuttings, and stand the pots in a close frame, shading the glass until roots are formed. Plants propagated in this manner last year may be planted out. Pentstemons, Mesembryanthemums, certain of the hardy perennials, and border Chrysanthemums may also be planted. Should the weather turn very cold, the Calceolarias and Chrysanthemums will need protection, which may be afforded by placing branches of evergreens amongst them. Pinks raised from cuttings last year should be set out in their flowering quarters. Large clumps of Pinks are effective objects in the front of the mixed border, and they are also suitable as edging plants. Anchusa italica raised from seed sown last year should also be planted. Stir the ground between the plants with the hoe on frequent occasions; this will tend to bring heavy soil into a good, working condition.

Bedding Plants.—If plenty of cold frames are available, many kinds of bedding plants may be removed from the warmer houses to make room for other subjects which need warmth. Pelargoniums, Heliotropes, Ageratums, Lantanas, Marguerites, and Irisines may, if well established in pots, be removed to the frames. The ventilation and watering must be done with great care until the plants are accustomed to the cooler conditions, and protective material should be at hand ready for use during times of frost. Endeavour to grow the plants dwarf and bushy by stopping the leading shoots on frequent occasions. Continue to plant in pots or boxes rooted cuttings as soon as the plants require increased room. Seedlings should be pricked out before they become crowded and drawn in the seed-pan, for neglect in this matter may result in weak specimens when the time for bedding out arrives. Certain annuals may be transplanted direct into the beds, provided the shelter of a temporary frame is afforded for the present.

THE KITCHEN GARDEN.

By John Dunn, Foreman, Royal Gardens, Windsor.

Radish.—Small sowings of Radish may be made weekly on a warm south border. Birds are the worst enemies of this crop, and should be guarded against by placing a net over the bed as soon as the seeds are sown. Radishes require a liberal supply of moisture at the roots to ensure a quick growth.

Vegetable Marrow.—If pits are available, a sowing of this vegetable may be made in small pots in a compost consisting of three parts rich loam and one part leaf-mould. When the plants have made their first rough leaves they may be planted on mounds of rich soil within 18 inches of the roof glass. The pit will require very little air until the plants are growing freely, when the lights may be removed on sunny days, to be replaced again at night. Marrows require a liberal supply of moisture at the roots, and, as the season advances, weak liquid manure.

French Beans.—If heated pits or houses are available it will be an easy matter to maintain a constant supply of French Beans. After this date the best results will be obtained from sowings made in pits, as the plants will grow with greater freedom and not be so liable to attacks of insect pests as those grown in pots. The soil in which the seeds are planted may consist of three parts loam and one part leaf mould, and should be raised to within 18 inches of the roof glass. It should be placed at least 9 inches deep, to obviate frequent waterings. Air will not be necessary until seedlings appear, but at that stage the pit should be ventilated carefully until early in the afternoon, when the ventilators should beclosed. Syringe the foliage twice daily in fine weather. The Belfast variety is grown extensively at Frogmore; the pods are gathered whilst quite young and cooked whole. French Beans in pots should receive frequent waterings with liquid manure from the farmyard. Small twigs may be placed around the plants as soon as the latter are a few inches high, to keep the shoots upright. Syringe the foliage freely to keep Red Spider in check.

Carrots.—A sowing of this root crop may be made in any part of the garden where the soil is light and rich. Sow in shallow drills at one foot apart. Any of the stump-rooted varieties may be selected, and the roots should be ready for use early in summer. The principal sowing of Carrots should be deferred until another month. The earliest Carrots in pits are ready for the final thinning, after which the soil should receive a good watering. Air should be admitted freely during the day, and a little ventilation afforded at night, in order to keep the plants stocky.

THE APIARY.

By Chloris.

Starting Bee-keeping.—At this season people are seriously considering the question of commencing bee-keeping, whilst others may wish to make another start. The Isle of Wight disease has destroyed the whole of the bees in certain districts—in some cases for the third or fourth time. It is small wonder that some who have lost their stocks for several years in succession are in doubt about a fresh start, and incline to the conclusion that it is best to wait until stocks are healthy again. Those apiarists who are so unfortunate as to live in districts where the disease is prevalent will have to find some means of ridding the area of the complaint. In the Board of Agriculture's Report on the disease mention is made of robbing as being one of the great causes of the spread of the disease. Since so many stray swarms must have died in trunks of trees, roofs of houses, etc., leaving behind them infected stores in abundance, these should be searched out and destroyed. The report also states that the water supply is a great factor in spreading the disease, for since bees drop their fæces on the wing, water is contaminated in this manner, the excrement of diseased bees being highly charged with the spores of Nosema Apis. To cope with this difficulty, pans of clean water should be placed near to the hives to induce the bees to drink from an untainted source. The vessels used for this purpose should be kept scrupulously clean.

Feeding.—A substitute for pollen may be used, and Symington pea-flour may be recommended. Some of the flour should be placed in sunny positions amongst a few wood shavings. Those who live in districts where fruit trees grow in plenty will do well to stimulate the bees about the last week in March and until the end of April. This can be done by obtaining a comb of honey, bruising the cappings by running a penknife point across the surface in every direction, and placing the comb next to the outside patch of brood, for it will not be wise yet to divide the brood-nest by placing the comb thus early in the midst of it. Those who have an insufficient supply of sealed combs of honey will have to resort to syrup feeding. Take 10 lbs. of pure cane lump sugar, 7 pints of water, 1 oz. of vinegar, 1 oz. of salt, and boil for a few minutes, taking care not to let the mixture burn. It should be given to the bees in a lukewarm condition, taking care not to spill any, as this will cause robbing. Let the entrances be only wide enough to allow one bee to pass at the time, so that the fed colonies may the more easily defend their stores if attacked. The feeding bottle should be so made that the bees will have access to only a limited amount of syrup, or they will commence to store the syrup, and this should be avoided. Those who reside in the clover districts will not need to feed the bees unless the stores are very low indeed, and in this case a cake of soft candy will suffice. The incoming nectar will be sufficiently stimulating to make a good queen lay sufficient eggs to stock a hive to overflowing with bees at the end of May, when clover is usually in full bloom. From present appearances the flowering of the clover may be expected even before that date.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the **PUBLISHER**, 41, Wellington Street, Covent Garden, W.C.

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS**, 41, Wellington Street, Covent Garden, London. *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

Special Notice to Correspondents.—*The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

APPOINTMENTS FOR APRIL.

TUESDAY, APRIL 1—
Roy. Hort. Soc. Coms. meet. (Lecture at 3 p.m. by Mr. Arthur W. Paul on "The Literature of the Rose.") Hort. Club meet. (Lecture by Mr. Clarke on "Some Features of the Natural History of South Africa.") Scottish Hort. Assoc. meet, Nat. Amateur Gard. Assoc. meet.

WEDNESDAY, APRIL 2—
Liverpool Hort. Assoc. Spring Fl. Sh. (2 days). R.H.S. General Exam. in Horticulture.

THURSDAY, APRIL 3—
Linnean Soc. meet. Huntingdonshire Daffodil Sh.

SATURDAY, APRIL 5—
Soc. Française d'Hort. de Londres meet. New York International Fl. Sh. (8 days).

MONDAY, APRIL 7—
Surveyors' Inst. meet.

TUESDAY, APRIL 8—
Cornwall Daff. and Spring Fl. Sh. at Truro (2 days). Devon Daff. and Spring Fl. Sh. at Barnstaple (2 days).

WEDNESDAY, APRIL 9—
Roy. Caledonian Hort. Soc. Spring Sh. at Edinburgh (2 days). Tewkesbury Daffodil Sh.

THURSDAY, APRIL 10—
Perpetual-flowering Carnation Soc. Sh. at Leamington (2 days).

MONDAY, APRIL 14—
United Hort. Ben. and Prov. Soc. Ann. meet.

TUESDAY, APRIL 15—
Roy. Hort. Soc. Coms. meet. Daffodil Sh. (2 days). (Lecture by Rev. Prof. G. Henslow on "The Origin of Life—why it is undiscoverable.")

WEDNESDAY, APRIL 16—
R.H.S. Bulb Sh. and Primula Conference. Roy. Hort. Soc. of Ireland Spring Fl. Sh. (2 days). Co. Clare Hort. Soc. Spring Sh. Roy. Meteorological Soc.

THURSDAY, APRIL 17—
Ipswich Fl. Sh. Linnean Soc. meet.

MONDAY, APRIL 21—
Surveyors' Inst. meet.

WEDNESDAY, APRIL 23—
R.H.S. Exam. in Cottage and Allotment Gardening. Midland Daffodil Soc. Sh. at Birmingham (2 days). N. of England Hort. Soc. Spring Sh. at Leeds.

THURSDAY, APRIL 24—
Norwich Spring Fl. Sh. 25 (F.).

SATURDAY, APRIL 26—
Ghent Quinquennial Exh. (9 days).

TUESDAY, APRIL 29—
Roy. Hort. Soc. Coms. meet, and Nat. Auricula and Primula Soc. Sh. (Lecture at 3 p.m. by Mr. G. Bunyard, on "Spring Border Plants.")

WEDNESDAY, APRIL 30—
Nat. Auricula Soc. (Mid. Sect.) Exh. at Birmingham Bot. Gdns. (2 days).

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich—45.2°.

ACTUAL TEMPERATURES:—

LONDON.—*Wednesday, March 26* (6 P.M.). Max. 50°; Min. 38°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—*Thursday, March 27* (10 a.m.); Bar. 29.5°; Temp. 46°; *Weather*—Showery.

PROVINCES.—*Wednesday, March 26.*—Max. 47° Sheep Haven, N. Ireland; Min. 41° Berwick.

SALES FOR THE ENSUING WEEK.

MONDAY AND FRIDAY NEXT—
Herbaceous Plants and Perennials, Hardy Bulbs and Lilies at 12. Roses and Fruit Trees at 1.30. At 67 and 68, Cheapside, E.C., by Prothefoe and Morris.

TUESDAY NEXT—
Rare and valuable Orchids, by order of F. Menteith Ogilvie, Esq. At 67 and 68, Cheapside, E.C., by Protheroe and Morris, at 1.

WEDNESDAY NEXT—
Herbaceous Plants and Perennials, Hardy Bulbs, etc., at 12. Trade sale of Liliums and other Bulbs at 12. Roses and Fruit Trees at 1.30. Palms and Plants at 5. At 67 and 68, Cheapside, E.C., by Protheroe and Morris.

THURSDAY NEXT—
Freehold Nurseries at New Eltham and Sidcup, by order of the Exors. of the late Mr. T. W. Childs. At the Mart, London, E.C., by Protheroe and Morris, at 2.

FRIDAY NEXT—
Imported and Established Orchids. At 67 and 68, Cheapside, E.C., by Protheroe and Morris, at 12.45.

Fruit Farming Abroad.

There are few statements so erroneous and so current as those which assert that the man trained to fruit growing in this country is incapable of carrying on that occupation in other countries. The most recent instance which has come to our notice of the publication of this assertion occurs in a letter contributed to the *Times* on the subject of Fruit Farming in British Columbia. The passage runs as follows: "American fruit farmers will tell you that it is generally the clerk or professional man, who starts admittedly knowing nothing about it, who, of the newcomers, makes the best fruit farmer; while the man from Kent or Worcester fruit districts is usually the most hopeless case, because he starts thinking he already knows something about it. Really there is just about as much difference between fruit farming in Kent and in the dry belt of British Columbia as there is between growing turnips in a ploughed field and cultivating hothouse grapes under glass."

We have heard this kind of statement often in America, occasionally in places where the astute American who made it was employing and continued to employ an English foreman. We must bear the reproach philosophically and await further information in justification of the last contention in the above citation as to the curious and complete difference between fruit growing in the dry belt and in these islands. In the meantime we should like to know more about those men from Kent and Worcester. The implication is, of course, that they had had experience of fruit growing at home; for otherwise, had they possessed the complete ignorance which is apparently the passport to success in growing turnips on ploughed fields or fruit in British Columbia, they could not have failed. We would ask for further information on this subject, and perhaps some of the growers abroad who read these lines will favour us with accounts of their experience. It should be noted that the charge is specifically incapacity in growing and not lack of knowledge of business methods, and that in the letter from which we have quoted the suggestion is made, apparently in seriousness, that the man without previous experience becomes expert as a result of attending a college course.

Pending further information and relying on such observations abroad as we have been able to make, we hold the opinion that the writer of the lines we have quoted is mistaken. The differences between fruit growing in the dry belt of British Columbia and in Kent or Worcester are not so great as between turnip and hothouse grape culture. Experienced fruit growers who should happen to transfer themselves from Kent to Columbia would not prove failures as compared with clerks, nor would they be less slow to acquire what the colleges have to teach them. The statement to the contrary is, we suspect, of the order of that attributed to the man who visited France on an excursion steamer which just touched at Calais and put off again. On his return home he exclaimed: How curious it is that all Frenchwomen have red hair!

From the point of view of a narrow patriotism, we should like to think that all our skilful cultivators remain at home and that the legend of incompetence was due to the fact that only the failures from Kent and Worcester strayed into the dry belt. This hypothesis, however, cannot be entertained, for in the parts of North America which we have visited we have found English and Scotch growers settled and successful. If the assertion is only a picturesquely callous way of stating the fact that we are as a race somewhat slow to move and of conservative instincts, not ready to change our ways and inclined to believe that the way we hold is the right way, then we plead guilty to the charge; but it is a very different charge from that actually made in the statement cited above. British fruit growers, in common with other growers, do not cultivate the ground in order to demonstrate the truth of opinions, but to get fruits; and in the prosecution of that object their practical knowledge will prove an asset of inestimable value, whether it be applied in the Kentish gardens, in the dryest of all dry belts, or in any other part of the earth where fruits are to be raised.

Coloured Plate.—(BOUGAINVILLEA SANDERIANA.)—The famous French navigator, LOUIS ANTOINE DE BOUGAINVILLE (1729-1811), has a splendid monument to his everlasting memory in the Brazilian shrub which his botanical friend and fellow-countryman, COMMERSON, discovered and named after him. In all tropical and sub-tropical countries where flowers are cultivated, Bougainvillea has become an established favourite. Its glories are sung by travellers, and even globe-trotters are roused to enthusiasm when they first see it in some sunny clime. Madeira is now almost as famous for its Bougainvillea as for its wine and bananas, and the plant is said to be equally popular at other ports of call in the warmer parts of the world. Like many other plants, Bougainvillea thrives particularly well near the sea. It is most probable that the several varieties or species known in English gardens are sports which originated in tropical gardens. The famous brick-red B. lateritia, the best form of which is called Rosa Catelina, probably originated in Madeira, where there is a very old plant with an immense stem hanging over an ancient garden-well at Quinta Sant Andrea, which "for many years has borne its burden of blossoms and called forth the admiration of untold numbers of tourists through successive winters." This refers to B. lateritia, Rosa Catelina having been obtained, we are told, from Las Palmas, Grand Canary, by Colonel PETRE, Westwick House, Norwich. This gentleman showed a large flowering branch of it at a meeting of the R.H.S. in April, 1909, when it was awarded a first-class certificate. These two, with B. Sanderiana, Maud Chettleburgh, and B. Cypheri, are no doubt sports from B. glabra, which differs from the other recognised species, B. spectabilis, both in having almost glabrous, comparatively small leaves, and in its time of flowering. The variety Cinnabar, a red-flowered sport from B. spectabilis, said to have originated in Palermo, has lately been named B. Lindleyana. Under cultivation in this country the purple blossomed Bougainvilleas flower with greater freedom than the others. Rosa Catelina has not yet

been sufficiently tested to justify a decision on this point, but we have not seen it flowering with anything like the same freedom as B. Sanderiana, which, under greenhouse treatment, appears to be the most floriferous of all. We have seen this variety grown in 6-inch pots in the open air all the summer; and when placed in a little warmth, the plants, small though they were, bloomed surprisingly well. Trained up a pillar in a sunny position in a conservatory, and pruned rather severely, this variety makes a great display every summer. Messrs. Sander & Sons obtained it "from an old-English garden, where it had been cultivated many years." They exhibited a group of it in flower at a meeting of the R.H.S. in 1893, when it was awarded a first-class certificate.

Reverting to the question of variation, there is an interesting account of the behaviour of Bougainvilleas in *The Flowers and Gardens of Madeira*, by the Misses Du Cane, published in 1909. This book contains several charming coloured pictures of Bougainvilleas in Madeira, where they grow over pergolas and corridors, or wander at will over a wall or bank, providing a gorgeous mass of colour. They produce branches of blossom 10, 15, or even 20 feet long. After describing the purple flowered B. spectabilis and the brick-red B. lateritia, the Misses Du Cane go on to say; "Do not imagine that Madeira only boasts of these two coloured Bougainvilleas in its winter season. From these two have sprung many others, seedlings, no doubt, hybridised in a country where the heat of the sun will ripen most seeds. So now there are rosy reds, lighter or darker, to choose from, shading through a range of colour which, like the beauty of its parents, seems to stand alone." What a wonderful island for gardening Madeira must be! It has become the home of many kinds of plants—the Bengal Rose, the African Belladonna Lily, South American Fuchsias and Poinsettias, Japanese Wistaria, Bignonias, etc. These do not merely grow well there—they have established themselves, and would become a nuisance if not kept within bounds. And the king of them all is the royal Bougainvillea.

Royal Horticultural Society.—The next meeting of the committees will be held on April 1 in the Vincent Square Hall, Westminster. At the three o'clock meeting of the Fellows an address on "The Literature of the Rose" will be delivered by Mr. Arthur W. Paul.

Report of the Fourth International Conference on Genetics.—Monsieur Ph. de Vilmorin, secretary of the Paris Conference (1911), has brought his heavy labours to a close by the issue of a fine volume of some 670 pages, containing full reports of the proceedings of the Conference. The report contains nearly fifty separate memoirs, each of which, published in French, is provided with an English summary. As M. Ph. de Vilmorin remarks in the brief preface, the labour involved in bringing together such a large number of contributions has been arduous. The result, however, fully justifies the energy which he has expended, and everyone interested in the science of genetics will be grateful for the admirable manner in which he has discharged his task. The English summaries are generally well done, but in one case in which the translation appears to have been entrusted to the author, we have a page or so of English which is fearfully and wonderfully made, and will remind many readers of their vain endeavours to make themselves intelligible in a foreign tongue. The rendering of "pollen corns" for pollen grains, and of "steaks" for streaks, may serve as cheerful reminders of our own linguistic failings. Many of the papers are of permanent importance, and must be referred to separately on a subsequent occasion. Collectively they demonstrate in impressive fashion how rapid and great has been the growth of the science of genetics, and how sound are the Mendelian foundations on which that science is laid.

Societe Francaise d'Horticulture de Londres.—The date of this society's annual dinner at the Café Royal has been altered to Saturday, April 19. The change of date will enable those to attend the dinner who, had the original day been adhered to, would have been prevented owing to their presence at the Ghent Exhibition.

Book for Market Gardeners. — The Gresham Publishing Company announce the publication of a new work on gardening from a business point of view, entitled *Commercial Gardening*. The book is edited by Mr. John Weathers. It is intended for market-growers, market-gardeners, smallholders, and others who grow garden crops for market.

Incendiarism at Trevethan House. — Trevethan House, Englefield Green, Egham, Surrey, the property of Lady White, widow of Field Marshal Sir George White, V.C., has been burned to the ground. From documents left in a prominent place in the rockery, it would appear that the act of incendiarism is due to the desire of the perpetrators to demonstrate their fitness for political power.

The "Times" "Irish" Number. — The publication by the *Times* of a number (March 17) devoted to Ireland is warmly appreciated by everyone interested in agriculture, and in the cultivation of the land generally. Since so much information of the greatest value is contained in the Irish number, and since not a little of that information is derived from sources which are inaccessible to most people, it is to be hoped that this number may be republished in book form. Among the most instructive of the articles bearing on the development of the natural resources of Ireland are those dealing with the work of the Department of Agriculture, with the agricultural co-operative movement, and with farm products and dairying. The facts recorded with respect to the progress of co-operation between farmers are remarkable and encouraging. Thus, although Sir Horace Plunkett only began his crusade in 1899, there are now in existence no fewer than 955 societies, with a membership of 97,000. The turnover for 1911 amounted to £2,666,483, and the total business transacted by the societies since the inception of the co-operative movement is £28,000,000. The most poignant epoch in the history of Ireland—the famine of 1846—is described in the article headed "The People and the Land," and words cannot add to the eloquence of the figures which record the effect of that famine on the population. In 1844 the population was 8¼ millions. Twenty years later it was little more than 5½ millions. In 1884 it was just below five millions; and in 1911 the population had fallen to 4,381,951. The effects of the potato famine are still with us, and it will take years yet before they are effaced. Nor may we wonder when we read the extract written by Father Mathew in August, 1846: "On the 27th of last month, I passed from Cork to Dublin, and this doomed plant bloomed in all the luxuriance of an abundant harvest. Returning on August 3, I beheld with sorrow one wide waste of putrefying vegetation. In many places the wretched people were seated on the fences of their decaying gardens wringing their hands and wailing bitterly the destruction that had left them foodless." It might be added, as supplementing the account of this disaster given by the *Times*, that the Repeal of the Corn Laws was a direct result of the ravages wrought by Phytophthora infestans, and that the repeal was in large measure due to the report presented by the first editor of the *Gardeners' Chronicle* (John Lindley) to Sir Robert Peel.

The Disguises of Potato.—Few things have so many names as has the Potato. Patata in Spanish America, Patata it remained in English till comparatively recent times; and inasmuch as words travel as well as commodities, Patata journeyed from Spain to Southern France, where after its voyage it called itself Patate. French soldiers introduced the Patate to the notice of Parisian amateurs of slang, and now Patate is good argot for Pomme de terre. Nor do these exhaust the appellations by which the "noble tuber" is known to the French. Thus a writer in *Wörter und Sachen*, quoted recently in the *Westminster Gazette*, points out that the Italian word Tartuffola has penetrated France as far as Auvergne. Not even the strictly guarded frontier which separates France and Germany has prevented the passage of the German "Kartoffel," disguised in French as "Cartouffle." From Germany also the dialect form "Grundbirn" has entered France, and made itself at home in the unlikely equivalent of "Crompir," which has been further corrupted into Pomme-pir. Yet another French name—according to the same authority—is Canada, which suggests to those who think in continents the country of origin of the Potato.

Town-Planning Scheme and Kew Gardens.—Efforts are being made by the Richmond authorities to preserve the amenities of that riverside town, and especially the riverside walks from Richmond to Kew, in a town-planning scheme. The Local Government Board recently held an inquiry into the scheme, at which it transpired that in order to safeguard the vistas from Kew Gardens across the river, Richmond included in their application the Sion House estate, belonging to the Duke of Northumberland, which is in the area of the Heston and Isleworth Council, which opposed Richmond's action; and also some land in the Brentford area. Brentford's river front is purely industrial, and it is only a tree-planted island which belongs to Richmond that hides some gasworks from the Gardens. Richmond now seeks to prevent the adjoining island from being developed for industrial purposes. Sir David Prain, the director of Kew Gardens, stated at the enquiry that the æsthetic value of Kew depended largely upon the existence of the open spaces beyond the Thames on the Middlesex side, and that if these open spaces were converted into a continuation of the less pleasing features in the Brentford district, the necessity would arise for screening in the spaces which at present increased the amenities of Kew. It was unfortunately known already that the conditions over against Brentford, with its smoke, were unfavourable to plant growth as compared with those that prevailed at the Richmond end of the garden. If these conditions extended along the river throughout the full extent of the garden boundary, the necessity would probably arise for the transfer to some other site of the institution as a whole with, as a not impossible corollary, the industrial development of the area that its existing gardens occupy.

Easter and Kew.—The Gardens at Kew are a favourite resort for Londoners at Easter time, but this year the gloomy weather was responsible for a very meagre attendance. Only 62,000 visited the Gardens on Easter Monday, compared with 127,000 on the same day in 1912. The Office of Works erected a temporary building near the old site to take the place of the tea pavilion destroyed by fire last month. A permanent pavilion will probably be erected by August.

Mr. W. Botting Hemsley, F.R.S.—Our readers will share in our congratulations to Mr. Hemsley on his recent election as an honorary member of the New Zealand Institute. As the number of honorary members is limited to thirty, and these need not of necessity be British citizens, the honour is a very high one.

Royal Gardeners' Orphan Fund.—We are informed that Colonel the Right Hon. Mark Lockwood, C.V.O., M.P., will preside at the twenty-fifth annual dinner of the Royal Gar

deners' Orphan Fund, which will take place at the Hotel Cecil on Thursday, May 15.

HORTICULTURAL CLUB.—A House Dinner of the club will take place at the Hotel Windsor, Westminster, on Tuesday next, April 1, at 6.30 p.m. After dinner a lecture on "Some Nature Notes in South Africa" will be delivered by Mr. J. EDMUND CLARK, B.Sc., who will show a series of lantern slides prepared from photographs taken by the lecturer in South Africa.

THE ALPINE GARDEN.

SPICATE CAMPANULAS.

SPICATE inflorescences are rare amongst the members of the genus Campanula, most of the species having their flowers arranged in a looser and more graceful manner. But three of the European species produce their flowers on a spike, namely, C. thyrsoides, C. spicata, and C. macrostachya. The last-named is scarcely distinct from C. spicata, being but a more attenuated form which is found further east in the Balkans. All three plants are of a biennial character, and probably this fact accounts for their being so seldom met with in gardens. Nevertheless they all produce seed freely, and are not difficult to cultivate. They are suitable for planting in the rock garden, a group of either species in flower being very attractive.



FIG. 92.—CAMPANULA THYRSOIDES: FLOWERS, PALE YELLOW.

C. THYRSOIDES (see fig. 92) forms a rosette of light-green, narrow leaves that are covered with hairs. In the second year stout, unbranched stems from 9 inches to 1 foot high are produced, the upper half consisting of a dense compact spike of pale yellow flowers. The species is a native of the limestone Alps of the Jura, Carpathians, and Transsylvania, and usually grows in the fissures of rocks or stony débris at an altitude of from 3,000 feet to 6,000 feet. It is easy of cultivation in gardens, provided it be planted in stony, well-drained soil. The seeds should be sown in sandy soil in early spring, preferably in a little heat, although this is not absolutely necessary. When large enough the seedlings are best potted singly in small pots, to be planted out in their flowering quarters later.

C. SPICATA (see fig. 93). This species is taller and thinner in habit than C. thyrsoides, the stems often attaining a height of 2 feet or more, and covered for the greater part of their length with purplish-blue flowers. The species is found all over the subalpine and mountainous regions of the Southern Alpine chain. This plant also forms a rosette of roughly hairy, long and narrow leaves during the first season. Although only one stem is usually produced on each plant, there are sometimes two, as shown in the illustration. The plants may be grown under the same conditions as those advised for the other species. They flower in early summer, and the inflorescence lasts for a long time in an attractive condition and bears a succession of flowers.

A natural hybrid has been recorded between these two plants with the foliage of the former and flowers of the latter species. It may be described as a somewhat compact form of C. spicata, but with light-green leaves. *W. I.*

WASTED ENERGY.

IF a score of leaves are allowed to grow on a plant where half-a-dozen would do the requisite work better, there is wasted energy. Yet this is what happens with the majority of fruit trees. Not only is there wasted energy, but positive harm is done in other ways. No leaf should be allowed to grow where there is no reason for its existence.

Take the case of a bush Apple or Pear tree which the cultivator intends to keep restricted. What is the use of allowing it to make scores of shoots from one to two feet in length when many of them must ultimately be cut off? Why not employ this energy to build up the permanent parts of the tree? You cannot remove any large quantity of growing leaves from a plant which is developing fruit without checking that development. This knowledge is now turned to account by the best growers of Grapes. Why should it not be extended to all other fruits? Instead of allowing a tree to grow wildly and remain unsightly for months, I recommend and practise, when I have a chance (but my work in this direction is now limited), stopping the shoots in April, while they are still soft, by merely taking out the point carefully with the finger and thumb nails, and at the same time removing any shoots which are not wanted. The strongest shoots are operated on first, and in a few days the weaker ones will have become stronger, and be ready for checking. Any very weakly shoots may be left to grow still longer, and will at the same time increase in diameter, owing to the supplies being diverted temporarily from those which have been stopped. It is thus possible to get a symmetrical tree with growths of regular size. Future growths should be stopped again once or twice during the summer, and never allowed to make more than three or four leaves at a time. The soft shoots, after they are stopped in April, supposing they are two or three inches long, will extend by the elongation of the internodes to double their length, and their basal buds will swell without bursting. New growths will be produced only at the end where the point has been removed. By this system you can be sure of having the bases of the shoots ripe in the autumn, however bad the weather may be. You can also have all the fruit, as well as the embryo fruit buds and primary leaves, exposed to the light, and they will never receive a check from summer pruning.

As to this summer pruning, it is frequently performed after the wood has become somewhat hardened and has for the most part ceased to extend. Perhaps the operation is not so long delayed by the experienced practitioner, but he is the exception, and we have to address those possessing less practical knowledge. The roots, being still active, will continue to send up supplies, which, in the natural course of things, would be utilised by the leaves and shoots without causing further elongation. But when a large proportion of these leaves and shoots has been removed the supply exceeds the demand, and after recovery from the check new growths are forced out, causing the whole ripening process to be upset, and even those basal buds which do not actually burst must be prejudicially affected. We frequently see, especially when a wet autumn succeeds a dry summer, thickets of green shoots which retain their leaves till either the knife or the frost removes them. In such cases the trees have probably been cut in closer than the intelligent advocate of summer pruning would recommend.

In my young days I had some experience in the R.H.S. gardens at Chiswick of what happens when shoots are cut back during the summer. Mr. Eyles was then in command of those gardens, and also what I will call the Doll's Garden, which was then in formation at South Kensington—that plaything which brought the Society to the verge of ruin while scientific horticulture was pushed in the background.

Mr. Barron was foreman at Chiswick, and Mr. Robert Thompson was put on the shelf, spending his time amongst the papers in the Council-room. There was a batch of some hundreds of fruit-tree stocks which I received orders direct from Mr. Eyles to bud. These stocks had a few days before been topped, and a practical Irish gardener, named Fleming, had been ordered to bud them, but he positively refused, well knowing that success would be out of the question. My policy was to obey, although I knew that "someone had blundered," and I might be made a scapegoat. It was a long and tedious job, as the bark would not rise freely; but I did my best, the result being, as all practical men would expect, that very few of the buds grew.

Well, then, supposing, instead of stocks, we are dealing with trees on which fruit is growing, and we summer-prune them, the portions of shoots left on the trees become hide-bound, with the sap dried up, and the supply of minerals and oxygen from the leaves to the fruit is completely cut off till such time as some of the latent buds [illegible] to grow, and thus cause a renewal of the circulation. How long this takes I cannot say, but it must be several days, and all this time the fruit is starving, and becomes like the shoots—hide-bound.

I had another lesson, and a severe one it was. This time it was with soft-wooded plants. My employer was fond of melons, and I was expected to supply a good one for every dinner party during late summer and autumn. The variety in favour was Meredith's Cashmere, and it was found to succeed best on the extension system, two plants filling a small house. They were grown more like Cucumbers than Melons, there being fruit in all stages on each plant, and they were never allowed to become anything like dry at the root. I had to attend to alterations in the flower garden a mile away, and consequently a foreman was engaged for the fruit and vegetable departments. He was a good fellow, with a considerable amount of training, but he did not look favourably on some of my innovations, which were entirely different from the practice he had seen. Amongst other things, he, during my absence, cut back the shoots of my rambling Melons, with the result that the fruits ceased to swell for some time, and when they attempted to start again they cracked, and became useless. Though succession houses were coming on, there was an unpardonable gap in the supply. A friend whom I had previously helped sent me some good-looking fruits, but they were not Cashmere, and they were not eaten. I found that Eastnor Castle, William Tillery, and Queen Emma did very well also on the extension system, and the fruit thus grown was larger, thinner in the rind, and more juicy than when grown on restricted plants. I repeat, you cannot largely defoliate a plant bearing unripe fruit without injuring that fruit.

I mentioned that the best growers of Grapes now practise economising the energy of their vines, but the best growers are very few in number, and the average man has much to learn. The physiology of the vine differs from that of any other plant with which I am acquainted.

Its shoots will grow equally well at any angle, and cuttings will root and form plants if inserted upside down as well as those grown in the orthodox manner. It also depends for its early growths, even to the showing of its bunches, on the material stored up during the previous season, for it makes no new roots before its shoots are some inches in length. The first two leaves made on every shoot (and this is most noticeable on those started early in the season) are thin and smooth, with little substance, and they always remain comparatively small. Yet in the axils of these very leaves are produced and nursed the buds bearing the embryo bunches for the following year. We thus see how important it is to take care of these primary leaves, and endeavour to have them as near perfect as possible. You cannot do much to add to their texture after the stronger leaves, having fully developed, partially obstruct the light from them, for the stronger ones will be selfish, and the weaker will be comparatively starved. But by stopping early you can aid the weaklings very much. Bunches will show on well-cultivated vines by the time the laterals are five or six inches long. The laterals should then have the merest speck taken out at the point, and they will afterwards stretch out, without additional leaves, to a length of 3ft. or more. *Unorthodox.*



Photograph by W. Irving.

FIG. 93.—CAMPANULA SPICATA. FLOWERS, BLUE.

(See p. 206.)

PUBLIC PARKS AND GARDENS.

TREE FELLING AND PRUNING.

As is the case with trees everywhere, those in public parks require careful and timely attention in the matter of thinning and pruning if the value of the permanent standards is to be considered. Unfortunately, public criticism in such matters is often so unwarrantable and so utterly devoid of a knowledge of tree management generally that those in charge of the work are to an extent deterred from carrying out these operations in the best possible manner and for the future benefit of the trees concerned. We see instances of this kind frequently, whether in connection with street trees, those in squares, or the equally important specimens that adorn our public parks and gardens.

Too often, also, it is the uninitiated in the art of tree culture and management who take up the cudgels against the official placed in charge of the work; who, in many instances, is not allowed to reply through the Press to the silly and unwarrantable charges levelled against his management. For various reasons it is a good plan to carry out, as far as possible, such work in the early part of the day when the visitors are few, and never to allow too large a number of fallen trees to lie about, these being removed as the work of felling proceeds. It is satisfactory, however, to know that in not a few instances that could be recalled, tree-felling and pruning that had been stoutly opposed by a section of the public has turned out of incalculable benefit to the remaining standards, and the fact is now admitted by those who at one time were of a decidedly opposite opinion.

Substitutes for the Larch.—Substitutes for the Larch have often been recommended, but, as before pointed out, none can be termed substitutes except, indeed, in the narrowest sense, although doubtless some of those whose merits have been advanced might reflect one or more of its valuable qualities. As a profitable coniferous tree, the Larch has no equal in this country, being hardy at high altitudes and producing a large quantity of light, clean, close-grained timber, the lasting properties of which are ahead of those of any other Conifer. The timber, too, unlike that of many other trees, is valuable in a young state, while a larger amount can be grown in the same [illegible] The trunk of

the Larch is neither knotty nor crooked—points that tell favourably with the wood merchant; and at the present moment the demand for Larch timber is far ahead of the supply; at a price, too, that is perhaps sixpence per cubic foot more than that of any other Conifer.

At one time hopes were entertained that the Corsican Pine, Douglas Fir, Sitka Spruce, or Giant Arbor-Vitæ would take the place of the Larch, but more matured experience has led to a different conclusion, and probably as an all-round substitute the native Scotch Pine has no equal.

Laurel and Yew Timber.—Not often does the common Laurel grow to so large a size as to be of value from a timber point of view. Several consignments have, however, been sent from various parts of Ireland to Belfast and other seaports, where the timber has found a ready market at quite remunerative prices. From estates in Armagh and Tyrone many tons of Laurel timber were supplied some years ago, the largest logs being about a foot in diameter at the butt end and fully 20 feet long.

The timber is remarkably heavy, of fine, close grain, and takes a good polish, working well under the tools of the carpenter. In two instances the price realised for the timber was 35s. per ton, the smaller end being cut to 2 inches diameter. One does not generally associate the Laurel with peaty soil, but in the instance referred to, the largest timber was produced on reclaimed peat bog, whence fuel for household purposes was at one time obtained.

Yew timber is rarely procurable in large quantities, but we were told by a merchant recently that there was a demand for this, and that single trees were being bought up eagerly. For turnery and veneering purposes, Yew timber is largely used, while the consumption in rustic works is considerable. It is somewhat difficult to season without warping and splitting, probably the best way being to allow the timber to lie on the damp ground after felling for some months before being sawn into boards. There seems to be no fixed price for Yew timber, some logs nearly 2 feet in diameter selling at 2s. 6d. per cubic foot, while a large quantity of rather rough and mixed fetching equivalent to 10s. per cartload. *A. D. W.*

DISTRIBUTION OF ALPINE PLANTS.

The flora of the Alps is, on the whole, very similar to the floras of the other high mountain ranges of the northern hemisphere. Many plants found in the Alps are also common to the Pyrenees, the Scandinavian mountains, the Balkans, the Caucasus, the Himalayas, and the mountains of Siberia, as far north as the boreal regions. If there is any difference between the Alpine and the Iceland Poppy, between the Edelweiss of Switzerland and that of Siberia, the difference is so small that all would recognise at the first glance the common origin of both. A great number of plants found on the highest Asiatic mountains are identical with the Alpine species; for example, Silene acaulis, Azalea procumbens, Primula farinosa, Viola biflora, and many others.

There are, however, species which are strictly Alpine, and are even confined to one small portion of the Alps, to which they are indigenous. They do occasionally spread to other mountains, and even invade the valleys, but in most cases it is a simple matter to recognise their origin; and these places of origin are called, in the terms of phytogeography, "centres of dispersion." They stretch along the whole of the Ligurian and Maritime Alps, as far as Carpathia.

It is impossible to notice here more than those centres from which we obtain our best and rarest plants. There are in the Alpine chain three main sources of foreign plants, which have reached the Alps in some unknown way. The oldest source of vegetation is in the north, and is the remainder of the flora which existed in the glacial period. Examples of these plants are:—Saxifraga Hirculus, S. stellaris, S. bulbifera, S. cernua, Linnæa borealis, Trientalis europæa, Potentilla fruticosa, Papaver alpinum, and Azalea procumbens. The eastern and Siberian flora gives us our largest trees, and the undergrowth in the forests, as well as numbers of plants which are freely distributed in Siberia. The Larch, the Swiss Pine, and the Red Spruce are clearly from the large Siberian plains, and Leontopodium (Edelweiss), Doronicum, Arnica, Artemisia, Saussurea, Aquilegia, Cypripedium, and Anemone sylvestris are of similar origin. The Mediterranean flora, particularly in the southern valleys of the Alps, is responsible for many very fine species, of which the chief are Erica carnea, Adonis vernalis, Cyclamen, Anemone pulsatilla, Primulas of the Euauricula group, Saxifragas of the Kabschya and Euaizoöna groups, the Cistuses and Helianthemums.

From the extreme west the influence is still felt of the now extinct continent Atlantide, as expressed in the Armerias, Saxifragas of the Dactyloides group and the Sempervivums.

Many plants, however, are strictly indigenous to the Alps. We may here state that the best centres are not in the highest Alps, but on the oldest ground in the south, west, and east. The Mont Blanc chain, for instance, has not one single species of its own, and has one of the poorest floras, while the Grayan Alps, close by, especially the lower slopes, form one of the richest. The chief centres are the Maritime Alps, Cottian, Grayan, Pennine, Bernina, Bergamasc, South Tyrol, and Eastern Alps as far as the Croatian plain.

In the Maritime Alps there are to be found many endemic plants which are not seen elsewhere except, perhaps, in the mountains of Ligury, Sardinia, and Corsica: Aquilegia Reuteri, Matthiola tristis, Alyssum halimifolium, Thlaspi limosellifolium, Viola Valderia and V. nummularifolia. This last species is one of the gems of the Alpine flora—a true Pansy with the appearance of a Violet; the exquisite Silene Campanula, with its myriads of pink flowers (one of the best wall plants); Silene cordifolia, a very curious rock plant; Dianthus velutinus, D. Hanryi, D. hirtus, D. furcatus, Moehringia dasyphylla (M. sedoides), one of the most peculiar of rock plants, and its relative, M. papulosa, with glaucous leaves; M. Tendæ; Arenaria aggregata, very nearly allied to A. tetraquetra; Linum campanulatum; Genista cinerea and G. Lobelii; and the minute, charming, and exceedingly rare G. Villarsii, which grows in the west; Cytisus Ardoinii; Potentilla Valderia, with silver leaves; Saxifraga lantoscana, which covers the rocks of the whole chain on the western slopes, and reaches as far as Moutiers, in Provence; S. lingulata, its near relative, which prefers the north side and the deep clefts of the central chain; S. cochlearis, which is to be found everywhere; S. florulenta, the most typical plant in the range; S. pedemontana*; Artemisia pedemontana; Campanula macrostyla and C. petræa (this last, with its tiny yellow flowers, is a very interesting plant; it is also found in the South Tyrol, which seems to have been its original home); the delicate Micromeria Piperella or Tendia Piperella of the Alps of Tenda; and Primula Allionii.

The Cottian range lies at the feet of the beautiful Monte Viso, one of the finest peaks in the Alpine chain. This centre is very rich in species, producing Saxifraga Valdensis (which extends from the Col de la Croix as far as the Taillante and the Viso itself, but is found nowhere else), Isatis alpina, a very curious plant with bluish leaves; this is also peculiar to the district, unless a similar species found on the South Apennines be considered identical. Primula Cottia extends from the Val Germanesca to the top of the Col de la Croix; P. marginata, occurring as far south as the Ligurian Alps, and on the French side to Château Queyras; Fritillaria delphinensis; the wonderful Gentiana Rostanii, with its long-stemmed blossoms, covering the damp meadows around the Monte Viso; Cerastium lineare, as far as the Grayan Alps; Cardamine Plumieri; Hieracium Rostanii; Androsace brigantiaca (a large, white-flowered form of A. carnea, with serrate leaves); the peculiar and very rare Berardia subacaulis, extending from Queyras to Briançon; Dianthus neglectus, one of the finest of Alpine flowers found as far south as Tende, and northward to Mont Cenis and the Lautaret; Campanula stenocodon, which had here its origin; Daphne Verlotii, a form of C. Cneorum; Achillea Moritziana, nearly allied to A. Herba-rota; Astragalus alopecuroides, a curious and interesting plant, which extends as far north as the Grayan Alps; the very fine Campanula Elatines, whose near relative, C. elatinoides, is found in the Bergamese Alps.

Mont Cenis lies between the Cottian and the Grayan Alps.† It can hardly be considered as a real centre of origin, although so many plants bear its name (Campanula cenisia, Viola cenisia, Poa cenisia, Pedicularis cenisia, &c.). It may have produced Ononis cenisia and Campanula Allionii, which are both to be found there.

Mont Cenis is the favourite hunting ground for the botanist, partly on account of its being so easy of access and partly because the flora is really rich. This latter fact is explained by the formation of the mountain—half of lime and half of crystalline. I cannot understand Mr. Farrer's statement‡ that Mont Cenis is of granitic formation, not lime, nor his denial to botanists on this ground the right to call Anemone alpina a calcicole plant. The pass itself is of gypsum (sulphate of lime), which is being mined by two different companies, and it is on this soil that the Anemone grows and flourishes. The hospice itself is flanked by limestone rocks, on which grows a whole calcicole flora (Saxifraga cenisia and S. diapensioides, these latter the best specimens I have ever seen; Petrocallis pyrenaica and Alyssum alpestris, etc.).

I should like to explain here the reason why we speak of Col du "Mont Iseran," Col du "Mont Cenis," &c., although there are no mountains bearing these names. The fact is that the Romans applied the word "mons" to all ascending roads—hence the "Mons Jovis" (Great St. Bernard), "Mons Geminus" (Mont Cenis). These appellations, therefore, which Mr. Farrer seems to find somewhat ridiculous, are merely harmless Latinisms.

The Grayan Alps are small and low compared with the rest of the chain; but they are rich in plants of the most characteristic and interesting species. Here we find the curious Æthionema Thomasianum, which is peculiar to this territory. This species (according to Dr. L. Vaccari, who is the best authority on the flora of the Italian Alps) was once exhausted by a German nurseryman, who went to the place with men and trowels and took away, in huge sacks, every single plant. The professor, on discovering this, was obliged to sow it again, obtaining the seed from a botanic garden in the Swiss Alps! The plant is easily recognisable by its peculiar winged seeds and prostrate habit. It is different from all other Æthionemas found in Europe, though it approaches somewhat to A. armenum. *H. Correvon, Floraire, Geneva.*

(To be concluded.)

* I must add here that in his book *Among the Hills* my friend, Mr. Reginald Farrer, says, on p. 315, that Mr. Correvon has wrongly praised the beauty of Saxifraga lingulata on the Ruvinette. This must be a mistake, There is no Saxifraga lingulata there, only S. pedemontana. I should like further to add that I never was on the Ruvinette, and therefore certainly never expressed any appreciation of the vegetation there.

† It must be by inadvertence that Mr. Farrer places Mont Cenis in the Grayan Alps, and Tourin and Suza in Lombardy.

‡ *Among the Hills*, page 32.

KEW NOTES.

OFFICIAL GUIDE FOR VISITORS.

An official guide has been appointed by the President of the Board of Agriculture and Fisheries to conduct parties of visitors round the collections contained in the garden, plant houses and museums and to point out objects of particular botanical interest. Two tours will be made daily, Sundays, Good Friday, Christmas Day and Bank Holidays excepted, one of about an hour and a half starting at 11.30 each morning throughout the year, and one of about an hour at 3 each afternoon except during the months of June, July and August, when the afternoon tour will start at 5 p.m. In the mornings the plant houses and museums will be visited, and the parties will be limited to six persons. The afternoon parties, which will be limited to twenty persons, will be conducted round various portions of the outdoor collections. Should any afternoon prove wet, the museums, North gallery and temperate house may be substituted. A constable will be in attendance with each party to collect fees and to prevent unauthorised persons attaching themselves to the party. The following scale of charges has been authorised: 2s. 6d. for each person attending a morning tour, and 1s. for each person attending an afternoon tour. The constable attached to the parties will collect the fees of visitors, who will sign their names in the book and pay their fees before the tour commences. Children under the age of twelve years cannot be included in the parties. Visitors who wish to avail themselves of the services of the guide should attend at the stone portico of Cambridge Cottage on the south side of Kew Green, near the church, shortly before time at which the guide is advertised to start his tour. Anyone or any parties making application beforehand to the Director in writing to be included in a tour on a particular day would have priority in the event of the authorised number of visitors for a party being exceeded.

WEEKLY PROGRAMME.

	Mornings. 11.30 a.m.	Afternoons. 3 p.m. (in June, July and August 5 p.m.).
Monday ..	Timbers of the World: Oak, Deal, Walnut, Teak, Mahogany, &c. Wood Museums.	Coniferous trees and their economic importance. Southern portion of Arboretum.
Tuesday ..	Palms, Bamboos, &c., and their economic uses. Palm House and Museum II.	Herbaceous plants of Temperate countries, the principles of their classification, and their uses.
Wednesday	Ferns and Fern Allies. Fern Houses and Museum II.	General tour among trees and flowering shrubs.
Thursday	Rubber, Fibres, Food Plants, Drugs, &c. Economic Houses and Museum I.	The Royal Botanic Gardens and their History. Famous trees, buildings and other landmarks. Maps and Plans.
Friday ..	Exotic plants of botanical or horticultural interest: Orchids, Cape plants, Begonias, Pitcher plants, &c. T Range.	Alpine and Water plants. Rock Garden and Aquatic Garden.
Saturday ..	Flora of Warmer Temperate Regions: Australia, New Zealand, Himalayas, &c. Temperate House and North Gallery.	General tour.

PUBLICATIONS RECEIVED. — ***The Terrestrial Isopoda of the Midland Plateau.*** By Walter E. Collinge, M.Sc. Reprinted from *The Journal of Economic Biology*, February, 1913, vol. viii, part 1.—***Ice Cold Storage on the Farm.*** By R. R. Graham (Toronto, Ontario: Ontario Department of Agriculture).—***The Journal of the Board of Agriculture,*** March (London: Board of Agriculture). Price 4d.—***Field Experiments at the Harper Adams Agricultural College, Newport, Salop, and in Staffordshire and Shropshire*** Joint report for season 1912. Price 1s.

Hardy Plant Year Book, 1913. (National Hardy Plant Society.) Secretary, Mr. A. J. MacSelf. Price 1s. 6d. post free.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

BROWN AND GREEN OAK TIMBERS. — A. D. W.'s letter on this subject contains several statements which are not in accordance with my experience, and on which I should be glad of more exact information. If Mr. Michie has any evidence that the oak producing brown wood is a distinct species it would be very desirable to give it, as though I have taken immense pains to find out what I can about the causes which produce brown oak the question is no nearer to solution than it was when I wrote on it in the second volume of *Trees of Great Britain.* Certainly pollarding has nothing to do with it, and does not affect the colour, though it often causes decay. The statement that the timber is lighter than that of common oak is also contrary to my experience. The veneers of brown oak, so far as I know, are rarely, if ever, cut as thin as 40 to 50 the inch, about 10-12 being the usual thickness. When he speaks of green oak I may say that I have never seen any except quite small pieces, too much decayed to be used for furniture, and should be glad to know where a specimen of any size may be found. I have seen oak and other woods dyed green, and used in the belief that the colour was natural. *H. J. Elwes, Colesborne.*

PERPETUAL-FLOWERING CARNATIONS AND MENDELISM (see pp. 122, 154). — In reply to Mr. Taylor, the parents I mentioned were certainly not homozygous, and although at first sight your correspondent would seem to differ from me, I find that we agree after all. It is true that I did not mention the singles to illustrate my case; had I done so they would have but strengthened my argument. Moreover, I was not minimising the value of Mendelism, but merely pointing out when and why at the first application of Mendel's laws to Perpetual Carnations one might be misled into the belief that to these plants his laws are mere theory. *Laurence J. Cook, Bush Hill Park.*

CHANGES IN TWO YORKSHIRE GARDENS.— Among the many head gardeners who are changing their scene of action, two who are retiring from "active service" seem to merit at least a word in the *Gardeners' Chronicle.* The one is the veteran head of the Brodsworth Hall Gardens, near Doncaster—Mr. W. Chuck; the other Mr. Leadbetter, the skilful and efficient gardener at Tranby Croft. Brodsworth Gardens are justly celebrated for their beauty, and Mr. Chuck, who has had charge of them for forty-three years, may well be proud of the accumulated results of his labours. The writer has had the pleasure of his acquaintance for many years, and always met him at the York Gala and other large shows, where Mr. Chuck's exhibits were a regular feature—his British Queen strawberries were especially good. He did not, however, place the interests of exhibitions before those of the needs of his employer. His gardening career began—at the age of twelve!—in a garden near Hatfield; he gained further experience in the Botanic Gardens, Regent's Park, at Enville, and elsewhere, including Storr's Hall Gardens, Windermere. His employer in this latter place was the Rev. — Staniforth, a well-known horticultural enthusiast of his day. Mr. Chuck took up his duties at Brodsworth in 1870, and has served successively under four different members of tne Thellusson family. He is now retiring on a pension granted by his late employer, and is thinking of settling down near London. He will be eighty years old next October, has been a widower for fourteen years, and has no family. His successor at Brodsworth is already appointed. Mr. Leadbetter, of Tranby Croft Gardens, has filled his present position for twenty-eight years, and his care and skill have won golden opinions from all. The results of his good work are apparent in every department, both at home and at the exhibition, although Tranby Croft, unlike Brodsworth, is not an old-established place. It was chiefly developed by the late owner, Mr. Arthur Wilson, and during his lifetime a large number of distinguished visitors were received under its roof, including King Edward VII. To meet the demands for choice fruit, cut flowers, and vegetables at all seasons of the year, which entertaining on a vast scale always occasions, requires no ordinary skill; but Mr. Leadbetter showed himself fully equal to the task. Summer bedding was for years a notable feature of the gardens, and Souvenir de la Malmaison Carnations were a speciality there long before they became of general cultivation. Excellent crops of indoor fruit were to be seen each year in great variety, and it was at Tranby Croft that the writer first saw (some ten years ago) a really good bunch of Begonia Gloire de Lorraine in December. Chrysanthemums were also especially well grown. For many years Mr. Leadbetter has acted as judge at the leading exhibitions, and it was a great pleasure to meet him at these shows and enjoy an interchange of opinion on horticultural matters. Before settling down at Tranby he was gardener at Kilnwick Percy, near Pocklington. He has made friends, all of whom will wish him every success in whatever occupation he may take up. His post has been filled. *Yorkshire Gardener.*

ROMNEYA COULTERI. — This lovely Mexican Poppy is considered by many to be a difficult plant to cultivate, but it grows like a weed in these gardens and springs up from root suckers everywhere. The plants flower profusely, although they receive but little attention. *J. S. Higgins, Glynllivon Gardens, Carnarvon.*

CULTURE OF CYCLAMEN.—I agree with Mr. Cork (see p. 172) that Cyclamen can be flowered within fifteen months from the time of sowing with better results than if the seeds are sown earlier. I always sow the seeds during the last week in August, in the same manner as Mr. Cork describes, in a temperature of 65°. The pans are covered with slates, and a layer of moss about 1 inch deep is placed on the top of the slates. The moss is kept moist until the seedlings appear, so that the soil needs no water until germination takes place, provided it was moistened previous to sowing the seed. The pans are placed on a shelf near to the roof glass in a moist atmosphere until the middle of February, when the seedlings are potted into 2½-inch pots filled with a compost consisting of three-parts loam, half-part leaf-mould, dried cow manure, rubbed through a fine sieve, and a liberal sprinkling of silver sand and soot. The plants are grown in the same temperature until the middle of April, when they are then ready for shifting into 4½-inch pots. They are still grown in the same temperature until they are established into the new soil, when they are hardened gradually preparatory to placing them in a cold frame. The final potting is done during the first week in June, 7-inch pots being employed, with the similar compost as before, with the addition of a little bone meal, which becomes soluble by the time the flowers appear. The frames are kept closed for a few days, and sprinkled three times each day with soft water. Slight shade is provided during the hottest part of the day. The lights are removed entirely on dry nights during July and August. The plants are fed with weak liquid manure from the cow-sheds and soot-water when the pots are filled with roots. By this method the plants do not develop so many premature flowers as when the seed is sown in the spring. The result is sturdy plants that furnish an abundance of flowers from October until the end of March. *A. B. Ireland.*

TRAINING OF PEACH TREES (see pp. 145, 189). I welcome the kindly criticism of such an expert grower as Mr. H. W. Ward. By the interchange of ideas between practical men with opposite views the intelligent onlooker of less varied experience may see both sides of a question. I wish to give Mr. Ward all due credit for his share in the production of the trees at Longford Castle, which, as the result of a continuous combat with Nature, are deserving of all praise. I alluded to them as "fan-trained trees as good as it is possible to see." I did not say they were perfect, and I never expect to see a perfect one. On the other hand, I have seen some much nearer perfection trained on the system recommended, and my object is to encourage that which is more in accord with natural physiological laws, and has many points in its favour. As to "what would become of

fish-bone trained trees in five or six years for want of wall or trellis space," I mentioned that trees grown on this plan are very easy to shift, and I may add that an excellent fruit-grower, Mr. Milne, when at Camerton Court, in the coal-mining district near Bath, made a practice of regularly lifting his Peach trees every autumn, and found it much to their advantage. If trees are required to extend there is nothing easier than to allow the branches which have borne fruit to remain, and by continuing this practice from year to year as great a length of wall can be covered as by the fan method, and in less time. The branches will still all be trained at the same angle, which is a most important point in securing regular balance and equal vigour throughout. Mr. Challis follows this plan, to a limited extent, with his trees, which are planted upright across the house. Where there is little headroom, and it is inadvisable to plant another tree because of that limited room, he allows lateral extension, and with good results. Taking a lesson from this, the plan might also be adopted for very low walls or fences, where no other form could possibly have room for sufficient development. But except in such cases, I recommend simple cordons confined to a series of fruiting branches on each side of the main stem, with successional shoots springing from as near to the base as possible. As to the trees becoming stunted, new growths would be formed every year, and the fruit-bearing branches would be removed at the same time as the fruit was gathered. This would cause an annual rejuvenescence, as little beside the main stem would remain permanent. It is true the spurs would lengthen somewhat in a number of years, but it would be a long time before they became unsightly, and young trees may be raised easily which could be trained to a low wall or to stakes for two years, so that the old ones could be replaced at any time with trees which would bear some fruit immediately. Despite all that Mr. Ward states, fruit on well-established young trees will compare favourably with that produced on those which are forty years old. Small trees, too, can be restricted to a narrow rooting space, a yard or so in width, whereas in the case of old trees, with their roots extending, there is always a danger that a workman, in planting, say, early Cauliflowers, will think more of his vegetables than the trees, and may damage the roots of the latter. *Wm. Taylor.*



Photograph by R. A. Malby.

FIG. 94.—MAZUS RUGOSUS. FLOWERS, DEEP-MAUVE, SPOTTED WITH ORANGE.

PUYA CHILENSIS. — Mr. R. Irwin Lynch, in his description of this plant (see p. 189), enquires whether it has ever been grown out-of-doors except at Tresco, in the Isles of Scilly. It may interest him to know that we have succeeded in growing it out-of-doors for two years on a very dry, sunlit bank. Last winter it was unprotected, and consequently suffered somewhat from early spring frosts. This winter it has been protected by pine branches, and has, fortunately, escaped uninjured so far. It will be interesting to see whether we may succeed in flowering the plant successfully. *Rich. H. Beamish, Ashbourne, Glounthaune, Co. Cork.*

SENECIO GHIESBREGHTII (see p. 188).—This giant member of the Groundsel family, which is referred to on p. 188, is more generally known as S. grandifolius. When growing freely, as at Kew, it exceeds the height of two metres, though young plants raised from cuttings or established specimens cut back hard will flower well within that height. The plant forms a stout, curiously warted stem of quite a woody texture. The leaves are oblong, rough in texture, and in vigorous examples are more than a foot in length. It is, however, in the fact that its showy blossoms are borne in the winter that its main attraction lies. These flowers are, as in so many other members of the genus, of a bright yellow colour, and they are borne in large, closely packed heads from the upper part of the branches. A succession of bloom is kept up for some time. The species is of easy propagation by means of cuttings, and its cultural requirements are not at all exacting, though it needs fairly liberal treatment. An allied kind, sometimes confounded with this species, is S. Petasites, also a native of Mexico. The two plants are, however, quite distinct, for S. Petasites is of more slender growth, while the leaves are lobed, the flowers paler, and disposed in a thyrsoid terminal panicle, the whole inflorescence thus producing a lighter effect than does that of S. grandifolius. *W. T.*

VERONICA TRAVERSII (see p 172).—There is a specimen of this plant in these gardens 18 feet in diameter and 7 feet 4 inches high, which I planted 18 years ago from a 4½ inch pot. Veronica Traversii is a very suitable shrub for planting in the pleasure grounds. The foliage resembles that of the old Pimelia decussata—a favourite plant for exhibiting some years ago. The Veronica flowers during the early part of July. It is very hardy, for not only will it grow in situations exposed to winds, but it thrives in poor soil. *A. J. Long, Wyfold Court Gardens, Reading.*

MAZUS RUGOSUS.

MAZUS RUGOSUS is an uncommon plant in gardens, indeed, so little does it appear to be known that doubts existed when the plant received the R.H.S. Award of Merit on March 4 as to whether it was an annual or a perennial. This point was, however, cleared up by Mr. Crisp in his note on p. 190 in the last issue, where it is stated to be a perennial. The deep-mauve flowers spotted with orange almost hide the rest of the plant, nearly every shoot terminating in a blossom. The habit is very dwarf, specimens in pots scarcely appearing above the rims of the receptacles. The specimen illustrated in fig. 94 was shown on a rock garden at a meeting of the Royal Horticultural Society on March 18 by the Wargrave Hardy Plant Farm, Ltd.

THE ADULTERATION OF JAM.

THE heart of man is desperately wicked, and the perverse ingenuity exhibited by the adulterator of preserves and other food products is a sorry commentary on the text. The breakfast table groans under the iniquity of adulteration, and even of jam it appears that things are not what they seem. It was a sorry tale of petty fraud which Mr. E. Marriage unfolded recently in a lecture before the Society of Arts on the Adulteration of Jam. We are as depressed as grateful, though we confess to disappointment, in learning that the legend of the artificial raspberry pip has no basis in truth. Mr. Marriage indeed would seem to show that the only parts of a pot of jam which are not susceptible of adulteration are the pips. The forger of foodstuffs does not waste his ingenuity on petty things like pips, but proceeds on larger lines. He sets out boldly to make dear jam from the pulp or juices of cheap fruit—apples, lemons, gooseberries, and rhubarb.

If we are to judge of the truth by the manufacturers' labels, the addition of these pulps to jams—like the fleas on dogs—"improves" them. Such is his disinterested love for his fellowmen that the philanthropic vendor of these improved jams is prepared, if need be, to pay any small fine inflicted upon him by such undiscerning beings as magistrates. The risks which he runs are not, however, very great. If it be discovered that he has—for the good of humanity—added two inferior fruits and sesame seed to the natural and superior constituents of raspberry jam, he need only pay a pound. Raspberry jam seems to touch the imagination of the philanthropic improver. In order to show what nature might have done he adds 10 per cent. apple pulp and pays his pound like a man, or 20 per cent., and receives a caution; or, throwing aside altogether nature as a guide, he gives us raspberry jam made of gooseberries and pays two pounds fine when the improvement is discovered. The adulterator is a good economist, for the improvements which he effects result in a considerable reduction in the cost of manufacture. He is thus able to make two raspberries go where one went before. Mr. Marriage gives examples of the pretty wit of the cornered adulterators, one of whom propounded the epigram that it is as reasonable to expect apricots in apricot jam as sunlight in Sunlight soap.

They all have this in common, that they do good by stealth. As is natural, the amount of improvement effected varies with the season. If the plum crop is heavy the plum jam which is foisted upon us is made mainly of plums; but if the crop be a light one the adulterator rises to the occasion and prevents disappointment by giving us plum jam made of apples.

In the discussion that followed Mr. Marriage's paper various speakers pointed out that the amount of adulteration is considerably less than might be supposed, and also that the addition of juice is not infrequently an advantage. The fact remains that in the present state of affairs the dishonest trader has an absurd advantage over the honest jam maker, and of the improvements described by the lecturer we exclaim, Let well alone!

It has often puzzled us to understand why jams made in France are generally so superior to—as well as so much dearer than—those sold in this country. We thought that this was due to the price of sugar in the two countries: it may be that it is sometimes to be ascribed to the improvements. In good French jam the fruits are severally recognisable, whereas in most English jams they are reduced to an almost unrecognisable mash. Herein lies the opportunity of the adulterator. In any case the fruit grower—if he accept Mr. Marriage's description of the facts and the operation of the law—cannot welcome an improvement which makes apples and rhubarb compete with his raspberries and black currants. *Cynic.*

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

March 18.—*Present:* C. E. Shea, Esq. (in the Chair); Messrs. E. M. Holmes, A. Worsley, W. Hales, G. Gordon, and F. J. Chittenden (hon. sec.).

Dahlia plants failing.—Mr. Massee reported that the Dahlias sent from Edinburgh in which the buds had failed to start were attacked by the fungus Sclerotinia sclerotiorum.

Lathyrus sativus (*poisonous*).—Mr. E. M. Holmes showed seeds of Lathyrus sativus and those of Pisum sativum and P. arvense from India for comparison, in order to draw attention to the fact that seeds of the first-named plant were being sold (under the name of Mutti) for cattle food instead of the latter. They were imported from India and were now to be obtained in various markets. The seeds of L. sativus are poisonous, though the symptoms of poisoning do not always manifest themselves very quickly and the actual poisonous substance has not been isolated.

Holly growing on shingle beach.—A correspondent sent a photograph of a fine Holly growing on a shingle beach at Lydd, Kent, where also several other unusual plants are to be found growing wild. The bush is a large one and fruited well in the past year.

Alleged poisoning by Ferns.—Miss S. Edmonds sent an account of the death of two cats, supposed to have been caused by eating the fronds of Ferns in a dwelling-house. One had died and a second, which later betrayed the same symptoms, which were those of an irritant poison, was killed, as recovery was deemed impossible. The first was not examined, but the second was, and pieces of a Fern frond were found in the stomach. The Fern was sent for examination and proved to be Nephrolepis exaltata var. todeaoides. No record of this Fern or any of its congeners being poisonous was known to any member of the Committee, but the Committee would be glad to learn whether animals having access to it have been known to be poisoned. The evidence in the present case seems far from conclusive, but as cats very frequently nibble Ferns, and this Nephrolepis is very widely cultivated, other cases may come to light.

EDINBURGH GARDEN AND NURSERY WORKERS' UNION.

At a meeting of this newly-formed society held recently a constitution and rules were adopted and office-bearers appointed. Mr. Charles Swan was appointed secretary and Mr. G. Douglas treasurer. About 70 members joined at the same meeting.

DEBATING SOCIETIES.

WARGRAVE AND DISTRICT GARDENERS'.—A meeting of this Society took place on Wednesday, March 12th, when a paper was read by Mr. E. Feltham, of the Wargrave Hardy Plant Farm, on "Alpines." The lecturer described the best methods of constructing a rockery, also the most suitable kinds of stone. He referred to the proper aspect and the methods of planting, the propagation of Alpine plants by seeds, division of the roots, and cuttings. Owing to the early season it was decided to hold the competition in vase decoration on March 26 instead of April 23, the subjects for these evenings being interchanged.

BIRMINGHAM AND DISTRICT GARDENERS'.—At the meeting of this Association, held on the 17th inst., Mr. A. Cryer, gardener to A. Kenrick, Esq., Edgbaston, delivered a paper on "The Chrysanthemum for Exhibition and Decoration." Mr. H. C. Herbert presided. Mr. Cryer stated that the best cuttings were shoots about 3 inches long, taken from the base of the old plants. The watering of Chrysanthemums, said Mr. Herbert, should be done with great care. Whether fire-heat is necessary will depend on the weather; there is a danger of the plants damping in cool evenings following sunny days, unless the house is warmed. During the day it is advisable to raise the lights if the weather is favourable, and when it is not any condensed moisture present on the glass should be wiped off to allow the sunlight to reach the plants. Aphis and other insect pests may be destroyed by tobacco powder, whilst a good means of preventing damping of the blooms is to place a piece of blotting-paper over the flower during the time it is expanding.

DUMFRIES AND GALLOWAY GARDENERS.—A meeting of this Association was held on the 22nd inst., Mr. S. Arnott, Sunnymead, in the chair. Mr. MacDonald, gardener to Colonel Dudgeon of Cargen, Dumfries, gave a paper on "The Greenhouse." The author gave a concise account of the leading points involved in the planning, construction, and management of the greenhouse, together with a review of the best and most popular plants suitable for its decoration.

BRITISH GARDENERS' ASSOCIATION (*Edinburgh Branch*). — At the meeting of this Society, held on the 17th inst., Mr. W. Morland in the chair, a paper was read by the chairman on "Aquatic and Bog Plants." Mr. Morland referred to the collections of water plants at Shiply Hall, Cambridge Botanic Gardens, Wisley, Gunnersbury House, and Edinburgh Botanic Gardens. The next meeting will be held on April 14, when a debate will take place on the subject of "Does Practice or Science Most Benefit Horticulture."

GARDENING APPOINTMENTS.

[*Correspondents are requested to* **write the names of persons and places as legibly as possible.** *No charge is made for these announcements, but if a small contribution is sent, to be placed in our collecting Box for the Gardeners' Orphan Fund, it will be thankfully received, and an acknowledgment made in these columns.*]

Mr. G. H. Dallimore, for the past 3½ years General Foreman at Stoneleigh Abbey, Kenilworth, also Normanton Park, Stamford, as gardener to Falconor Wallace, Esq., Edgcote House, Banbury, Northants.

Mr. W. R. Hall, for the past 5 years Gardener to Mrs. Hargreaves, Arborfield Hall, Reading, and previously at The Chantry, Ipswich, as Gardener to Captain Leslie Wilson, D.S.O., The Manor House, Waltham St. Lawrence, Twyford, Berkshire.

Mr. F. J. Salt, for the past 6½ years Foreman at Osmaston Manor Gardens, Derby, and previously at Croxteth Hall and Trentham Hall, as Gardener to Lady Evelyn Cobbold, Holy Wells Park, Ipswich, Suffolk.

SCHEDULES RECEIVED.

Birmingham Horticultural Society.—The Second Annual Exhibition and Floral Fête will be held in Handsworth Park on Friday and Saturday, July 18 and 19. Secretary, Mr. William G. Carradine, 84, Hamstead Road, Birmingham.

Morley and District Paxton Society.—The Ninth Annual Chrysanthemum Show will be held on Saturday, November 22, in the Town Hall, Morley. Secretary, Mr. S. J. Wormald, Zion House, Morley.

Watford Horticultural Society.—The Summer Show will be held at Little Cassiobury, on Wednesday, July 16, and the Autumn Exhibition on Wednesday, October 29. Secretary, Mr. W. Waterton, Heath Farm House Gardens, Watford.

Hawick Horticultural Society. — The Summer Show of this Society will be held in the Town Hall, on Saturday, August 23, and the Autumn Show in the Town Hall, on Friday and Saturday, November 21 and 22. Secretary, Mr. Wm. Oliver, 20, Slitrig Crescent, Hawick.

Saltaire, Shipley, and District Rose Society.—The eleventh Annual Exhibition of Roses, Sweet Peas, and other Flowers, will be held in Saltaire Park, in conjunction with the North of England Horticultural Society's Summer Show, on Wednesday, July 9. Secretary, Mr. E. Wright, Rosedene, The Glen, Saltaire.

The Cheadle and Cheadle Heath Horticultural Society.—The tenth Annual Show will be held on Friday and Saturday, July 25 and 26. Secretary, Mr. C. M. Streat, Bank House, Gatley, Cheadle, Cheshire.

The National Auricula and Primula Society.—The Exhibition of this Society will be held in the Royal Horticultural Hall, Vincent Square, Westminster, on Tuesday, April 29, in connection with the fortnightly meeting of the Royal Horticultural Society on that date. Secretary, Mr. T. E. Henwood, 16, Hamilton Road, Reading.

Bletchley and Fenny Stratford Horticultural Society.—The Fourth Annual Show will be held on Monday, August 4, in the grounds of Bletchley Park. Secretary, Mr. Thomas Best, Bletchley.

TRADE NOTE.

Mr. Joseph Sangster, for the past ten years with Sir Jocelyn Gore-Booth, Lissadell, Sligo, is leaving this business to join Messrs. Thomson & Morgan, at the Sproughton Hardy Plant Nurseries, Suffolk.

THE WEATHER.

The Following Summary Record of the weather throughout the British Islands, for the week ending March 25 is furnished from the Meteorological Office:—

GENERAL OBSERVATIONS.

March 25, 1913.

Weather continued very changeable. Precipitation was experienced very frequently, and in the northern half of the kingdom a considerable portion of it was in the form of snow. Thunderstorms occurred in various districts, but they were more general on the 22nd in England than on any preceding day.

Temperature was below the average, except in England E., S.E., and the English Channel. In Scotland and Ireland the deficit was 3° or more. The highest of the maxima were recorded at most stations between the 20th and 22nd, and ranged from 57° in England S.E. and 56° in England E. and the English Channel, to 51° in England N.E. and 50° in England N.W. The lowest of the minima, which occurred on the 18th, ranged from 16° in Scotland E. (at West Linton) to 25° in England E. and Ireland N., and to 34° in the English Channel. The lowest grass readings were 4° at West Linton, 11° at Buxton and Birmingham, and 12° at Wisley. In many parts of the country the temperature of the soil at a depth of 1 foot was below the average, but at some stations it was a little above it. At a depth of 4 feet it was above it very generally.

Mean Temperature of the Sea.—Except on the south-west coast of Ireland the water was again colder than during the corresponding week of last year. On many parts of the coast the sea temperature was also below the normal, at least as much as 2.5° off the north-west of Ireland. At the Shipwash Lightship, however, it was more than 3.5° higher. The means for the week ranged from 48.7° at Scilly and about 47° off England S.W. and at Seafield, to about 40° at Cromarty and Pennan Bay, and to 38.5° at Burnmouth.

Rainfall was considerably in excess of the average in all districts. Falls of an inch or more in 24 hours occurred in many parts of the Kingdom, at some places early in the week, and in many on the 22nd. On the former date 1.1 inch fell at Guernsey and 1.4 inches (of snow) at Fort William. The largest falls on the latter date were 1.3 inches at Buxton and 1.5 inches at Aberdovey and Stonehaven.

Bright Sunshine differed little from the normal over the Kingdom as a whole. The percentage of the possible duration ranged from 39 in England N.E. and 38 in England E. and S.E., to 26 in England S.W. and to 21 in Scotland N. In this last district the mean daily amount was only 2½ hours, but in the north-eastern, eastern and south-eastern counties of England it exceeded 4½ hours.

Barometer and Wind.—Early in the week the centre of a depression moved southward to the east of England, but generally the cyclonic centres travelled in an easterly direction over the northern parts of these islands, and the main wind direction was from between south-west and west. Some of the disturbances were again deep, and the surrounding gradient steep. Gales were experienced on most coasts on the 18th and 19th; on the latter date the gusts reached the rate of 77 miles per hour at Southport. Late on Saturday, when a depression moved from the south-west to the north-east of England, the wind rose to a very violent gale on the English Channel, and to a fresh or strong gale over a larger area inland; at Kew Observatory a velocity in gusts of 67 miles per hour was reached.

THE WEATHER IN WEST HERTS.

Week ending March 26, 1913.

A sharp thunderstorm and a westerly gale.—This was, on the whole, a warm week for the time of year. On the last three nights, however, the exposed thermometer has registered from 10° to 13° of frost. The ground is at the present time about seasonable in temperature, both at 1 foot and 2 feet deep. The last two days have been fine, but previous to that there were eleven days on all of which more or less rain fell—the aggregate fall for that period being 1½ inches—making this the wettest period of the same duration for two months. Of that quantity, four gallons of rainwater have come through both the bare soil percolation gauge and also through that on which short grass is growing. During a short but sharp thunderstorm on the 22nd inst. the rain was falling for twenty-five minutes at the average rate of half an inch an hour. The sun shone on an average for 4½ hours a day, or for three-quarters of an hour a day longer than is usual at the same period in March. The winds were high, and on two days unusually high, on the first four days of the week; but since then light airs have as a rule prevailed. On the 19th at noon the mean velocity of the wind for the previous hour was 24 miles direction W.S.W.; and at midnight on the 22nd the mean velocity for the previous hour was 21 miles direction S.S.W. We have to go back to February 20, 1910, in order to find as high a wind as that experienced here on the 19th. The average amount of moisture in the air at three o'clock in the afternoon fell short of a seasonable quantity for that hour by 1 per cent. *J. [illegible], Hamstead, March 26, 1913.*

Obituary.

FRANCIS GEORGE HEATH.—We regret to record the death of Mr. Francis George Heath, which occurred on Good Friday at the residence of his son, Dr. Heath, of Weymouth. Mr. Heath will be best remembered as a writer on Ferns, but he also wrote on Sylviculture, and he edited the *Journal of Forestry* for a time. Mr. Heath was a native of Totnes, and was born in 1843. He entered the Civil Service in 1862 and rose to be a surveyor in the Customs Outdoor Department. He promoted the establishment of the express-letter system. He took an active part in securing for public purposes the open spaces known as Victoria Park, Epping Forest, and Burnham Beeches. Perhaps his best-known works were *The Fern Paradise* and *The Fern World*. Mr. Heath was a member of the Tiverton Board of Guardians, and took a keen interest in the local affairs of Silverton, where he lived. He married, in 1867, Eliza Ann, daughter of the late Mr. Edward Coles, of Bridgwater, and he leaves one son and two daughters.

LAW NOTE.

A GARDENER'S NOTICE.

AT the Hythe County Court recently a claim was made by a gardener for £2 1s. 8d., representing his wages for one week and four days.

Plaintiff stated that he had been head gardener to defendant for about two years, his wages being 25s. per week. On October 19 last he received notice to terminate his engagement, and then reminded his employer that he was entitled to wages up to the end of October.

His Honour perused several letters handed to him by the plaintiff and defendant.

In reply to counsel, plaintiff said defendant did not see him on October 5, nor did he tell him on that day that he would not want him after next week. Neither did defendant on October 12 tell plaintiff that he could stay another week if he was not suited with another situation. He (plaintiff) had given a month's notice, and did not expect to go before the month expired.

His Honour said he had to determine the one legal point. Did defendant give plaintiff a week's notice? It was quite permissible for him to do so, even though the plaintiff had given the defendant a month's notice previously. Plaintiff said he did not receive a week's notice, but that was uncorroborated by any witness. The onus of proof lay with the plaintiff, and in this he had failed. The case, therefore, must also fail.

ANSWERS TO CORRESPONDENTS.

BOOKS: *Floral Flower Decoration in the House*, by Gertrude Jekyll, price 6s. 4d. post free; *Colour in the Flower Garden*, by Gertrude Jekyll, price 13s., post free. These works may be obtained from our publishing department.

CAMELLIA LEAVES: *A. W. G.* The spots on the leaves are caused by Pestalozzia Guepini, a well-known disease of Camellias. Remove the infected leaves and spray the plants with liver of sulphur, at the strength of 1 oz. in 3 gallons of water.

CANADA: *W. K., Austria.* The chief Canadian Government Agent in London is Mr. J. Obed Smith, 11-12, Charing Cross, London. Canada is pre-eminently an agricultural country, and those who have experience in farming are most likely to succeed. Every assistance is rendered to immigrants of the right sort, but there are certain conditions which must be complied with; for instance, it is necessary to possess about £10 in money, besides a ticket to some definite destination in Canada, unless proceeding to an assured situation. All information, however, on this and other points can be obtained from the address given above.

CYCLAMEN: *Foreman.* The greenhouse Cyclamen is C. latifolium, a native of Greece, Palestine, and other parts of Syria. It was introduced into cultivation in this country in 1731. It is often called C. persicum in gardens, and is described under that name in most works on horticulture, but the name latifolium has priority.

GARDENIA UNHEALTHY: *Anxious, Yorks.* Eelworm is present in the roots. The pest is very difficult to eradicate and insecticides are of little avail. Burn the plants and remove the soil in which they have been grown, either sterilising it by baking or burying it deeply in some out-of-the-way part of the garden. The house should then be cleaned thoroughly with carbolic acid in solution, washing the woodwork with soft soap, carbolic acid and warm water. A correspondent in *Gardeners' Chronicle*, July 8, 1911, p. 7, recommends top-dressing pot plants with rape dust, which acts as an exterminator of Eelworms, and as a fertiliser of the soil at the same time. See also an article in the issue for July 13 last, p. 30.

HELIOTROPE IN GREENHOUSE: *Brandon.* The plant of Heliotropium which is trained against the wall in a greenhouse, and has long, unsatisfactory shoots, should be hard pruned at once. Do not apply water at the roots until new growth appears, but on sunny days syringe the stems twice or thrice. Such plants usually grow very freely, and after about 10 to 12 weeks become rather unsightly, so that it becomes necessary to cut them back occasionally during the growing season. This may be safely done provided that attention is paid to the application of water in the manner advised.

LILIUM CANDIDUM: *B.* The injury to the plants is known as Lily disease and is caused by Botrytis. The fungus is present in the bulb and grows up along with the stem. There is no cure. The soil in which diseased plants have grown should be treated with quicklime.

NAMES OF PLANTS: *A. W. H.* Tolmiea Menziesii. — *F. D. and Co.* Tolmiea Menziesii.—*A. W. G.* 1, Quercus coccifera; 2, Euphorbia; the specimen is insufficient to determine the species.—*Miss P. Ireland.* Magnolia Campbellii; the plant may be obtained from the nurserymen.—*G. A. C.* Lopezia miniata.—*G. W. B.* Probably a species of Hoya. Send again when in bloom. —*Miss B.* Probably Erica Veitchii.—*H. H. T.* 1, Trichopilia laxa; 2, Brassia caudata; 3, Oncidium bicallosum; 4, Odontoglossum Lindleyanum. *G. W., Ware.* 1, Begonia Fischeri; 2, B. Gloire de Lorraine; 3, B. nitida alba; 4, Saxifraga sarmentosa; 5, Begonia, garden variety; 6, B. parviflora; 7, B. semperflorens; 8, B. Ingramii; 9, send when in flower; 10, Calanthe veratrifolia if white, C. Masuca if lilac; 11, Amaryllis reticulata; 12, Chlorophytum elatum variegatum; 13, Pleroma macrantha; 14, Justicia carnea; 15, Dactylis glomerata variegata; 16, Diosma capitata; 17, Fittonia argyroneura; 18, Abutilon Savitzii; 19, Codiæum (Croton) Weissmannii; 20, Codiæum Johannis; 21, Eranthemum pulchellum; 22, Browallia elata. (On another occasion please bear in mind our rule that six specimens only should be sent at one time.—EDS.).

NECTARINE UNHEALTHY: *A. G.* The disease is known as Silver Leaf. See answer to *C. R., Constant Reader*, and *J. C.* in the issue for March 15, p. 176.

PEACH BLOOMS DROPPING: *A Reader.* You state that you have maintained an even temperature of 55°, which is much too high for Peach trees at the commencement of forcing: the trees should be allowed to start almost naturally. Fire heat should only be employed to prevent the temperature falling much below 45°, and, when the outside temperature is high, ventilation should be afforded throughout the night. A rise by sun heat only during the day will do no harm, provided the house is abundantly ventilated. These conditions should be continued till the flowers are fully expanded. When fertilisation has taken place, considerably more warmth may be allowed. The forward condition of the wood-buds shows that they have been growing at the expense of the flower-buds. Too much warmth with, perhaps, insufficient ventilation would cause this trouble. You should ascertain whether the border is too light in texture, and if it contains an excessive amount of nitrogenous matter, or a deficiency of phosphates and lime, for if so you may experience a similar failure another season, even if the atmospheric conditions are correct.

PELARGONIUMS DISEASED: *E. T.* The disease is caused by a fungus, Botrytis, which was either present in the cutting or in the soil. Destroy the plants and start with fresh stock.

PELARGONIUM CLORINDA: *F. A. F.* This variety was raised by the late Dr. Bonavia, who gave the following account of its origin in the *Gardeners' Chronicle*, April 15, 1905, page 232: "I began by pollinating the flowers of several Cape Pelargoniums with different pollens, and carefully ticketed every flower so pollinated with the names of the parents, but I did not obtain a single result. I grew tired of thus ticketing, and commenced to hybridise without making any record. As a result I found a single seed on Pelargonium quercifolium, which resulted in this pretty variety, 'Clorinda.' So that the mother is P. quercifolium, but the father is not known. I was at the time using pollen of some zonal Pelargoniums, but nothing is certain as to the name." "Clorinda" is an Italian woman's name.

POTATO DISEASE: *I. I. E. K.* The blackening is due to the presence of a bacterial disease known as blackleg.

SEAKALE: *W. B. S.* The cause of your Seakale growing unsatisfactorily is some check received by the plants. This trouble happens frequently at this time of the year. Growing the crowns in the dark has had nothing to do with the trouble. Oftentimes after the crowns are lifted they are allowed to become too dry, and frequently start away early into growth only to receive a check.

STOPPING CHRYSANTHEMUMS: *Nimbus.* The best blooms of Chrysanthemums are usually obtained from plants that are not stopped, but allowed to break naturally, taking the first crown bud. But certain late sorts must be stopped. If your plants were rooted in December or early in January, and are fairly strong, the following varieties should produce excellent flowers during the first week in November from first crown buds, without any stopping:—D. B. Crane, Mrs. G. C. Kelly, Thorpe's Beauty, Mrs. C. Beckett, William Turner, Harry Wood, Japan, Mrs. G. Hartmann, G. F. Richardson, Mrs. H. Paulton, Lady F. Ryder, F. T. Mew, Mrs. E. R. W. Benson, Countess of Granard, and Annie Angus. If the plants do not make their first break by about June 5, take out the point of each plant, afterwards taking up two or three shoots, according to the number of blooms each plant is required to develop. Ernest G. Mocatta should be stopped about April 7, Miss Gladys Herbert from June 10 to 12, J. Surry the first week in May, Mrs. J. G. Day at once, and Fred Chandler at the end of April.

WEEDY GARDEN: *Nemo.* Your best plan would be to plant the garden, which is infested with chickweed, with midseason or late Potatos at the end of April. If the garden is large it would be well to deeply plough it as soon as possible; many weeds will soon appear, and these will be destroyed when harrowing the ground preparatory to planting it. In smaller gardens the spade should be used for working the ground. The Potato crop will smother most of the weeds which grow during the summer, and after the crop has been harvested you will be able to plant the ground as your fancy dictates.

Communications Received.—F. B.—N. B. S.—F. B. Straffan—E. C. P.—A. R. V.—W. A. M., Ireland.—J. E.—S. A.—N. E. B.—T. D. A. C., Colorado.—W. S.—E. L.—F. M.—G. S.—F. R.—C. P. R.—W. W.—M. M.—W. F.—H. O. W.—W. T.—T. S.—Yorkshire Gardener—W. M.—R. A. M.—M. C. C.—Mrs. E. S. R. T.—R. N., Uppsala—L. F. P.—R. A., France—L. K., Switzerland—A. S.

THE

Gardeners' Chronicle

No. 1,371—SATURDAY, April 5, 1913.

CONTENTS.

American Ambassador, the new... 222
Books, notices of—
The Story of our Trees 215
Chrysanthemums, sulphur in soil for ... 223
Florists' flowers—
Good market Chrysanthemums ... 217
Forestry, International Congress on 223
French Society of Chrysanthémistes ... 222
Galloway, Prof. B. T. . 222
Hemsley, Mr W. Botting, honour for 222
King George presents a cup for Roses ... 222
Lawrence, Sir Trevor, retirement of... ... 220
Leamington Carnation carnival 222
Livingstone as a botanist 222
Mackenzie, Mr. Alexander, testimonial to 222
Market fruit-garden, the 213
Obituary—
Kingsmill, Andrew ... 227
Moody, M. 227
Morgan, J. Pierpont 227
Orchid pollen, theft of, at R.H.S. show ... 222
Orchids, sale of... ... 222
Paris Congress of Horticulture, 1913 222
Plants, new or noteworthy—
Rhododendron hæmatocheilum ... 214
Streptocarpus orientalis 214
Saxifraga × Faldonside 214
Societies—
Edinburgh Botanical 228
Royal Horticultural 222,224
United Horticultural Benefit and Provident 226
Streak disease of Sweet Peas and Clover ... 215
Tellier, Mr. Charles ... 222
Ventilation of glasshouses 216
Vries, Professor Hugo de 222
Week's work, the—
Flower garden, the ... 218
Fruits under glass ... 218
Hardy fruit garden 218
Kitchen garden, the... 219
Orchid houses, the ... 219
Plants under glass ... 218
Welshpool, effects of the weather at ... 223

ILLUSTRATIONS.

Burford Lodge, views in the gardens at ... 221, 223 & 224
Lawrence, Sir Trevor, portrait of (Supplementary Illustration).
Saxifraga "Faldonside' 214
Streak disease affecting Sweet Peas and Clover 215, 216

THE MARKET FRUIT GARDEN.

THE dry weather which prevailed throughout February continued, without important breaks, until March 13, after which we had a fortnight of considerable rainfall, with strong gales on three or four occasions. Arrears of digging were cleared up in the course of the month, and there was very little interruption of pruning, as nearly all the rain fell after working hours. Some hoeing was done under fair conditions in the first half of the month; but the rain of the latter half reset the weeds, chiefly grasses, to a great extent.

An Agreeable Disappointment.

After all, the development of fruit blossom is not nearly as premature as there was reason a month ago to fear that it would be. The frosts of the latter part of February and the lack of sunshine in March retarded progress more than could have been expected. In this respect former experience has been repeated, as my notes show that in several seasons when vegetation was extremely precocious at the end of January, astonishingly little further progress was made before the end of March. There was more progress this season, as we had no severe frost in the south, and hardly any of the north-east or east wind, which so often checks vegetation severely in the first month of spring. Still, there was a gratifying retardation, and fruit blossoming is not to be early beyond precedent. It is true that I have no record for any past year of Black Diamond Plums being in full blossom on March 15, as they were this season; but last year the date was only nine days later. Moreover, Monarch blossom was not quite fully expanded on the 30th, the date entered in my chronicle last year. In 1903 and 1906, Monarch was in full bloom on March 31. It is curious to notice how different varieties of any kind of fruit vary in the sequence of blossoming in different seasons. This year Early Prolific Plums are only a day or two behind Monarch, whereas they were a week behind last year. Again, Pond's Seedling is usually later than all my varieties except Gisborne's; but this season it will be next to Early Prolific. Greengage was in full blossom in 1912 on April 6, but will be some days later this year, and Czar and Pond's Seedling and Victoria will be before that variety instead of later.

No Pear in my orchard was in full blossom up to the end of March, but Louise Bonne of Jersey will be before these remarks are in print. In 1903 early Pears were in full blossom on March 31. Last year the date was April 15.

Some Cherry blossom was just beginning to show on my earliest variety on the last day of March. This is early; but last year the same tree was in full bloom on April 2.

Apples never looked like being so precocious in blossoming as Plums, Pears and Cherries. Irish Peach showed an expanded flower here and there on March 22, and this beats the record with me by fully three weeks. But this variety is unique this year; no other having had blossom buds near the expansion stage up to the end of March. At that time the fruit buds of many varieties had not burst, and the earliest, apart from Irish Peach, had their buds in compact clusters. In several past years this stage has been reached by early Apples by March 31, and last year the date was March 18.

As for Gooseberries and Currants, with me they are not now strikingly forward. Strawberries are grown only on a small scale for private use, and they strike me as quite backward. My records do not extend to the flowering of Raspberries; but it seems to be early for blossom buds to be showing, as they are.

On the whole, although the blossoming of fruit is, or will be, much earlier than it has been in the majority of past seasons, it cannot be said to be beyond precedent. Taking all kinds of fruit into consideration, 1913 cannot quite equal 1912 in premature blossoming, although the earlier stage of development noticed a month ago beat the record.

Glut or Failure.

It is hardly too much to say that glut or failure are the alternatives suggested by the appearance of Plum trees. The show for fruit in my mature Plum orchard is greatly in excess of any seen before for every variety but Victoria, for which this season is comparatively an "off" one. It is true that a great show of blossom does not necessarily imply a great yield of fruit, even when damage by frost is escaped. Other unfavourable weather influences often cause defective setting of fruit or great losses of fruit soon after its setting or in the stoning period. However, the essentials of a very heavy Plum crop are in evidence. As to failure, it does not necessarily mean total failure; but the long period during which frost severe enough to destroy much blossom or young fruit will be possible indicates a very precarious outlook. Last year, as is well known, a great proportion of the Plum crop was destroyed by frost in April.

Pears in my orchard are as thickly covered with blossom buds as they were in 1912. In that season they escaped the damage done to Plums; but in most years they are more extensively injured by frost than any other fruit.

Most varieties of Apples will have a good or fair show of blossom, particularly the late varieties, which gave very meagre crops last year. On the other hand, early and mid-season varieties on the whole are not with me as promising as they were a year ago, excepting young trees, which have not previously borne considerable crops.

Cherries are thickly studded with bold and healthy blossom buds, and promise a great crop, if not damaged by unfavourable weather conditions. Gooseberries and Red Currants can hardly equal last year's great yields, while Black Currants are not forward enough to be estimated.

The Aphis Also Early.

By a provision of nature, beautiful for the insect, but not for the fruit grower, the aphis in some mysterious way is able to time its emergence from the egg stage in accordance with the first development of leaves of the plants upon which it feeds. Consequently, the Plum aphis is as early this year as the Plum itself. A few colonies of the pest have been found on Monarch trees, and here and there on Pond's Seedling. As the blossom was more or less expanded when the pest was discovered, there has not been any chance of spraying to destroy it; for, although spraying with soft soap and quassia has not destroyed the vitality of blossom, so far as tests made have indicated, it probably deters bees and other insects from fertilising the flowers. Although I have had a more or less serious attack of aphis on Plums every year, I have never succeeded in finding any eggs upon the trees by even the most persistent searching with the help of a lens. If aphis had been found before any blossom had expanded the trees would have been sprayed. As it is, if the attack extends, there will be no opportunity of spraying to advantage, as the leaves will be curled over the pests before the blossom has fallen, and it is simply waste of time and money to spray after the curling. By the way, one aphis, one Apple sucker, and one thrips were discovered among the compact clusters of blossom buds on Beauty of Bath Apple on March 28 in a search of a few minutes. This is very early for finding even a few of these pests. The trees will have been sprayed before these notes are published.

Spraying for Apple Sucker and Aphis.

The best time for spraying against Apple sucker is as soon as the blossom buds of each variety have separated sufficiently to allow the wash to get well in between them, and before any blossom has expanded. Any exposed aphides are killed at the same time; but thrips is not so easy to kill. The latter, however, appears to leave the trees soon after the first summer spraying. The mixture used generally has been one of 10 lbs. of soft soap, 10 lbs. of quassia chips, and 4 lbs. of arsenate of lead to 100 gallons of water, the last being added to poison the food of caterpillars and other pests which feed upon leaves or embryo fruit. It is questionable, however, whether quassia does any good. Last season quassia extract was used instead of the chips, to save the time and expense

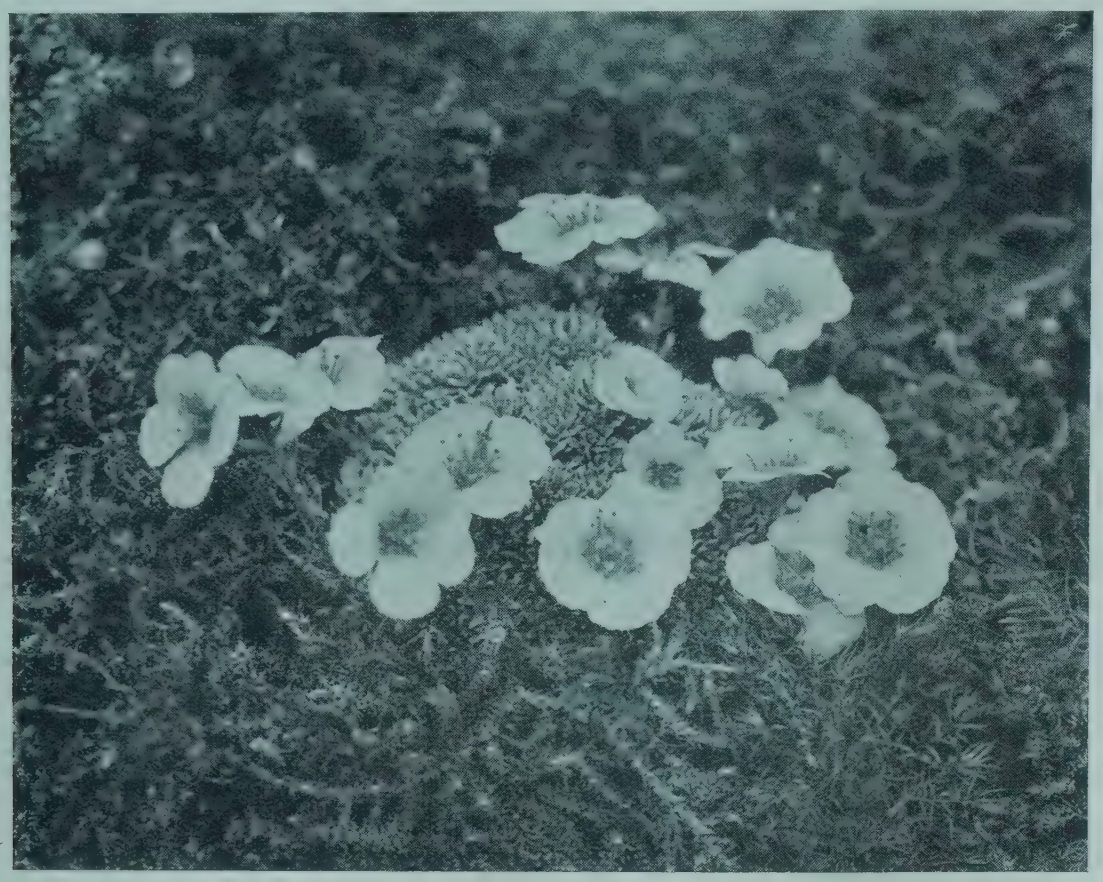
of boiling. But on trying it alone at eight times the strength recommended by the makers, it failed to kill aphides on infested shoots dipped into it. A small quantity of crude nicotine with the soft soap would be more effective; but its price is almost prohibitory. Soft soap alone will be tried with the arsenate of lead in the first instance on a small scale.

Wasted Energy.

I agree with the plan of pinching off the ends of Apple shoots as soon as they are a few inches long recommended by "Unorthodox" on page 206, provided that he does not apply it to the leaders. Indeed, a few months ago the plan was recommended in these notes, in order to save the great waste of growths that occurs when undesirable laterals are left to grow unchecked. April seems too early, as few side shoots would be formed before May. All laterals not desired to furnish a tree might be either pinched for spurs or cut off entirely as soon as they have natural fruit spurs freely, most of the work may well be that of cutting off laterals entirely as soon as they have started. For other varieties spurring may be practised to a large extent. The worst of this early pinching or pruning, as of all summer pruning, is that the spurred shoots have to be treated again to remove secondary growths from them. But the benefit to the tree, in saving energy from waste, as well as in letting sunshine and air freely into the interior of it, well repays the trouble and expense.

Straw Pads Causing Canker.

As a result of the very wet winter, I have noticed for the first time that canker has developed through the straw pads between tree and stake rotting the bark. It is well known that, when the pads drop out, canker may be caused by the rubbing of the tree against the stake; but it is new to me to find the same result when the pad keeps in place. Ordinary sacking, when used instead of a twist of straw, would probably keep wetter in a rainy season, and do at least as much harm. Some kind of tarred canvas would be an improvement as padding. *A Southern Grower.*



Photograph by R. A. Malby.

Fig. 95.—Saxifraga "Faldonside." Flowers pale yellow.

grown at least 3 inches long. Mr. A. H. Pearson, of Lowdham, recommended summer pinching in an excellent article which appeared in this journal on August 3, 1907; only he did not appear to contemplate work before June. To pinch the ends of the leaders, however, would be a great mistake, as it would cause the very waste of superfluous side shoots which it is desired to prevent. Upon this point "Unorthodox" is not explicit. In my opinion, whatever cutting the leaders require should be left to be done in the autumn or winter, or quite early in the spring. The object should be that of training a set of cordons radiating from the trunk, with plenty of air space in the middle of the tree, and when there are enough of them, and they are stout enough, and are pointing in the right direction, the less cutting they have the better. Unfortunately the aphis, by causing some of them to twist or form a mass of almost worthless buds, often renders it necessary to cut back a leader which otherwise would need no pruning. In the case of a variety which forms

SAXIFRAGA × FALDONSIDE.

To the late Mr. J. B. Boyd, of Kelso, gardeners are indebted for some of the finest hybrid Saxifrages in cultivation, including the variety illustrated in Fig. 95, but there appears to be considerable confusion as to the identity of Mr. Boyd's several plants. S. Faldonside was accidentally distributed with S. Boydii, and has been grown by some under the latter name, but those who have the substitute may congratulate themselves on possessing a finer variety than even the renowned S. Boydii itself. As was stated on page 158, the flowers are lemon-yellow. They are borne in twos and threes; each is ¾ inch in diameter, of very beautiful form, with full, overlapping petals crimped at the edges. The small, orange-coloured, glandular disk in the centre of the flower gives a pleasing touch of richer tint. The stem is suffused with pink, and the foliage silvery. To all these good points may be added freedom of flowering, for the small specimen in a pot exhibited by Sir Everard Hambro at the Royal Horticultural Society's meeting on March 4, when the Award of Merit was granted, bore ten trusses of bloom.

NEW OR NOTEWORTHY PLANTS.

RHODODENDRON HÆMATOCHEILUM.*

The plant described as R. hæmatocheilum was received at Kew from Messrs. Veitch under the name R. Davidii. From this species, however, it is readily distinguished by the leaves, which are rounded or almost cordate and not attenuate towards the base, by the much less elongate inflorescence and by the glabrous, smooth ovary and style. Its nearest allies are probably R. Sheltonæ, Hemsl. et E. H. Wilson and R. Fargesii, Franchet, from both of which, as also from R. Fortunei, Lindl., it may be distinguished by the pistil.

The specific name has been derived from the colour of the corolla, which is rather striking. The limb of the newly expanded corolla is of a rich carmine, and in bud almost a blood-red. In older flowers this coloured rim fades somewhat. *W. G. Craib, Kew.*

STREPTOCARPUS ORIENTALIS.

In the *Kew Bulletin* for 1911, p. 432, there is a description by Mr. Craib of a new species of Streptocarpus which had been found by Dr. Kerr on rocks near a stream on Doi Sootep, Chiengmai. This plant is specially interesting botanically, as it is the first species to be found in Asia, all the others, about fifty, being natives of Africa and the Mascarene Islands. It is also interesting horticulturally because it is the most decorative of the caulescent species, of which about twenty have been described and four of them introduced into cultivation. These four are S. caulescens, S. Kirkii, S. Holstii, and this new Asiatic species. There is little difference between them; they have stems about a foot long, leaves in opposite pairs, hairy, petioled, and ovate or elliptic, and flowers in axillary panicles, blue or purple, tubular with an unequal limb, an inch or less in length. In S. orientalis the stem appears to be unbranched, and a foot high. The leaves, which are covered with silky hairs, are elliptic, ovate, and about 2 inches across, and the flowers are purple-blue, nearly 2 inches long, drooping, on slender sub-erect pedicels. Hitherto no hybrid has been raised between species of the caulescent and the other two groups, Unifoliata and Rosulatæ, all the hybrids raised so far being between species of the two last-named group. It is not unlikely, however, that hybrids can be raised from the several members of the caulescent group. What we would all like to see is a race with short, sturdy stems, leaves of a reasonable size, and flowers with the colours, size, and substance of the S. kewensis breed. Perhaps Mr. Heal will be able to accomplish this. We have tried to do it at Kew without success. *W. W.*

* Rhododendron haematocheilum, Craib, sp. n. ab affini *R. Fargesii*, Franchet, ovario eglanduloso omnino glabro recedit.

Ramuli validi, primo virides, mox brunnescentes, ad 6 mm. diametro, juventute pilis brevibus glanduliferis hic illic instructi, mox glabri. Folia oblonga, apice rotundata vel obtusa, apiculata, basi rotundata vel rotundato-subcordata, ad 7.6 cm. longa et 3.2 cm. lata, tenuiter coriacea, glabra, supra viridia, subtus pallida, nervis lateralibus utrinque 13-15 supra conspicuis subtus prominulis, nervulis uti reticulatione gracili subtus conspicuis, petiolo valido supra canaliculato 7-15 mm. longo suffulta. Pedicelli 7-15 mm. longi, pilis brevibus albidis incrassatis parce instructi. Calyx brevissimus, denticulatus vel obsolete denticulatus. Corollae glabrae tubus 23 mm. longus, basi 1.1 cm. apice 3 cm. diametro, limbus 7-lobatus, lobis 1.3 cm. longis 2 cm. latis retusis. Stamina 14, longiora corollae tubo subaequilonga; filamenta glabra, albida; antherae fuscae. Ovarium glabrum, vix 5 mm. altum; stylus staminibus circa 1 cm. longior, glaber.

Cult. Hort. Veitch e seminibus in China a *Wilson* lectis.

NOTICES OF BOOKS.

The Story of our Trees.*

We can imagine a delightful book for children on the subject of trees; we can imagine even the lines on which such a book might be written. The whole book might be devoted to the biography of one of our common trees, and from the particular we might proceed on comparative excursions to the general. Or we might make the book a study of contrasts, and compare detail by detail some half-dozen or so of our common trees. But though our imagination carries us thus far, we would not undertake to write that delightful book; for we know how extraordinarily difficult it is to make good teaching books on Natural History subjects.

In the work under review the author has aimed at giving the story of our Trees in 24 lessons, but she has had less faith in her subject than the title would indicate. Instead of keeping trees as her exclusive text, the author utilises such material as fruits of Narcissus, Sweet Pea, Pansy, and Dandelion for the illustration of her subject. For the study of germination the author prefers Broad Beans and Wheat to such admirable subjects as Sycamore, Beech, and Oak, and even for the illustration of morphological points she selects the Rose and Gorse.

Eight pages are devoted to the fascinating subject of "How a Tree Lives." It need scarcely be said that they do not exhaust the subject. The book has distinct merits. It is written in clear and simple language, it conveys a large amount of accurate information, but it resembles too much the ordinary booklets dealing with Nature Study and strays too much from the trees, the story of which it purports to tell. The truth is that all of us who have had an academic training in science—the writer of this review among the number—seem unable to get away from that training. Our books are all "too much alike." We make our word-pictures on sadly conventional lines. We require to get back to Nature. If Miss Gregson would plant at yearly intervals a few acorns or, better, Horse Chestnut seeds in pots, and in the open in good soil and poor soil, and if she would record their lives season by season and year by year, she, with her gifts of exposition, could write a memorable book. Wells has put the whole subject of text-book writing with force and point in one of his brilliant works; urging that in the perfect state leisure and opportunity should be given to suitable people in order that they might produce text-books of the highest order possible. We would suggest that the authorities responsible for the encouragement of the teaching of Nature Study should set on foot an experiment in the endowment of text-book writers. A series of good books on the subject would be worth many times their weight in gold, and do far more good than many scholarships.

STREAK: A BACTERIAL DISEASE OF THE SWEET PEA AND CLOVERS.**

Mr. J. J. Taubenhaus, having taken up the project of "Some Fungus Diseases of the Sweet Pea" for thesis work at the University of Pennsylvania, met with in the course of correspondence, review of literature, and by specimens, a disease of the Sweet Pea known generally in England and less so in the United States as "streak." Specimens of diseased plants from Boston, Mass., and from England were referred to the senior author. The appearance of the disease suggested that it was of bacterial origin. Preliminary isolation work for the parasite readily revealed an abundance of bacteria in the beginning lesions. Attempts at infection of Sweet Peas with pure cultures gave positive results in ten days

The symptoms of this "streak" disease of the Sweet Pea were so similar to those of a disease previously observed in Red Clover as to suggest that the latter is of bacterial origin and related to the former. A search in the fields in the vicinity of Newark, Del., revealed the presence of the formerly observed disease on Red, Alsike, and Mammoth Clovers. The "streak" disease was also prevalent on several species of Lathyrus, the latter of forage types, and upon the numerous varieties of Sweet Peas (Lathyrus odoratus) with which Mr. Taubenhaus was working. Platings of beginning lesions from the Clovers, the different forage species of Lathyrus, and the different varieties of Sweet Peas indicated the causative organism to be bacterial.



Fig. 96.—Sweet Pea affected with streak disease caused by Bacillus lathyri.

History of "Streak."

The disease was first observed, according to a letter from Mr. T. A. Weston, of Orpington, England, by H. J. R. Digges, of Dublin, in 1904 or 1905. In the fall of 1906 Mr. Weston states he had a note of the disease in the *Gardener*, describing it as a "new disease under the title of 'Streak.'" In 1908 George Massee†, in a letter to a correspondent who had sent in diseased specimens, replied, "the disease is of a physiological nature"

So far as we have been able to obtain literature, it appears that only since the summer of 1908 has any definite work been done upon the disease. Chittenden‡§ in England during 1908, 1909, 1910, carried out inoculation work with the supposed parasite, viz., Thielavia basicola, obtaining during the first two seasons negative results.

In this work Chittenden gives a good description of the disease. He found in 1910 that by excessive watering he was able to get infections from Thielavia, but he does not indicate they were the typical "streak." He writes in conclusion, "To sum up, as far as our experiments go, the 'streak' disease is brought about by the attack of the fungus Thielavia basicola on plants that have received some check at the root."

During the past season (1912) Massee‖ again studied the disease, and attributed it to Thielavia basicola.

Another worker in England, Mr. Dyke¶

* *The Story of Our Trees*, by Margaret M. Gregson. (Cambridge: The University Press.) Price 2/6.

** Abstracted from a paper read before the American Phytopathological Society at Cleveland, Ohio, Jan. 3, 1913.

† *The Sweet Pea Annual*, 1909, p. 222. Official organ of the National Sweet Pea Society, Brentford, England.

‡ Chittenden, F. J., on "Some Plant Diseases New to or Little Known in Britain." *Journal Royal Horticultural Society*, vol. 36, pt. 3, pp. 545, 550, 1912

§ Chittenden, F. J., *The Sweet Pea Annual*, 1912, pp. 14-24.

‖ Massee, George, "A Disease of Sweet Peas, Asters and Other Plants" (Thielavia basicola Zopf., Royal Botanical Garden). *Bul. of Miscl. Information*, No. 1, 1912, pp. 44-52.

¶ *Gardeners' Chronicle*, 3 Ser. 51 (1912), Nos. 1308, p. 36; 1309, pp. 52-53; 1311, pp. 84

of St. Margarets, finds Macrosporium solani constantly associated with the disease, and believes it to be the cause of the trouble.

SYMPTOMS OF THE DISEASE.

Like the Bacteriosis of Beans, streak makes its appearance in the season of heavy dew. On the Sweet Pea the disease usually appears just as the plants begin to blossom; it is manifested by light reddish-brown to dark brown spots and streaks (the older almost purple) along the stems, having their origin usually near the ground, indicating distribution by spattering rain and infection through the stomata (Fig. 96, B C D). The disease becomes quickly distributed over the more mature stems until the cambium and deeper tissues are destroyed in continuous areas, when the plant prematurely dies. Occasionally petioles and leaves show infection; the latter show the usual water-soaked spots common to the bacterial leaf blight of Beans.

The disease is not a vascular infection; it confines its attack to the mesophyll, the cambium and deeper parenchymous tissues. The lesions on the stems gradually enlarge and deepen till they come together.

The disease was particularly severe upon one variety of Soy Beans, in which the lower lesions girdled the stem and penetrated so deeply that the plants blew over, as is occasionally to be met with in the "black leg" of Potatos (a bacterial disease).

In young Clover in August and September it is particularly injurious, vying with Bains' Anthracnose (Colletotrichum Trifolii Bain) and the Clover root borer in its activity. In Clover of all ages, probably the most severe attack takes place in the petiole at its union with the stem; in which case the entire leaf dies and the lesion extends down into the stem. The blackening of the stems and the spotting and water-soaking of areas on the leaves are common with the Clovers (Fig. 97 A D).

ISOLATION AND MORPHOLOGICAL STUDIES.

Over 1,500 plate cultures of beginning or young lesions were made from the several hosts. The organism may almost invariably be taken in abundance in pure culture from the beginning lesions in the stems of Sweet Peas when the surface is properly sterilised. Some difficulty was experienced at first in taking the organism from the Clovers; this was attributed to not selecting young lesions, to too severe surface sterilising, and to the ease with which the lesion in the thin cambium of the Clover dries out, thereby causing the death of the organism.

The isolation work readily indicated the parasite to be a bacterium; a yellow organism which grows luxuriantly upon all the nutrient media, and especially rapid upon nutrient media containing sugars. On standard nutrient glucose agar the colonies appear within 24 to 36 hours. The centre becomes granular and the colonies have a marked tendency to become stellate or auriculate.

Morphological studies show the organism to be a comparatively small rod-shaped bacillus, which in fresh cultures is rarely found in chains, and seldom united in twos or fours. The flagella are not easily demonstrated; they are shed so readily that usually not more than two to five may be stained, and these are generally quite short. However, when proper material is selected, carefully fixed and stained, the flagella may be demonstrated to be very long and delicate, and to number from 8 to 12, well distributed peritrichially.

CROSS INOCULATION WORK.

From the extensive isolation work 76 pure sources were carried on cultured media; these sources were from the following hosts: Sweet Pea (including sources from England, Boston, Mass., and vicinity of Newark, Del.), Lathyrus Spp., Red, Alsike, and Mammoth Clovers, Soy Beans, several species of culinary Beans, and one each from Cowpeas and Alfalfa.

After establishing the pathogenic nature of the organisms isolated from the Sweet Pea and the Clovers, several series of cross inoculation work were carried out. The two hosts, Sweet Pea and Red Clover, were used. Positive results were obtained with the different cultures (Fig. 97 A C).

CULTURAL AND BIOLOGICAL STUDIES.

With such a wide range of hosts, though the isolation cultures from each appeared similar, it was hardly expected that we were dealing with a single parasite. However, the cross infection work seems to indicate such a conclusion.

In order to further elucidate this phase of the investigation, cultural and biological studies were made. Out of the 76 pure sources, 37 sources, including the following number from each host (Sweet Pea 12, forage Lathyrus Spp. 3, Red Clover 6, Alsike Clover 2, Soy Bean 4, Wax Bean 2, Lima Bean 2, Cowpea 1), were run in duplicate on practically all the media indicated in the Descriptive Chart of the Society of American Bacteriologists (1907). Several other media were also employed. Included with these 37 sources, and run as checks on reactions and on the media, were the following organisms:—Pseudomonas phaseoli, Ps. campestris and Bacillus coli. The culture work readily showed the organisms from the different hosts to be identical.

So far as it is possible to learn, this organism differs from previously described pathogens, and it is referred to a new species, viz., *Baccillus lathyri*, Manns and Taubenhaus.

Further details will be given of this parasite in an early publication

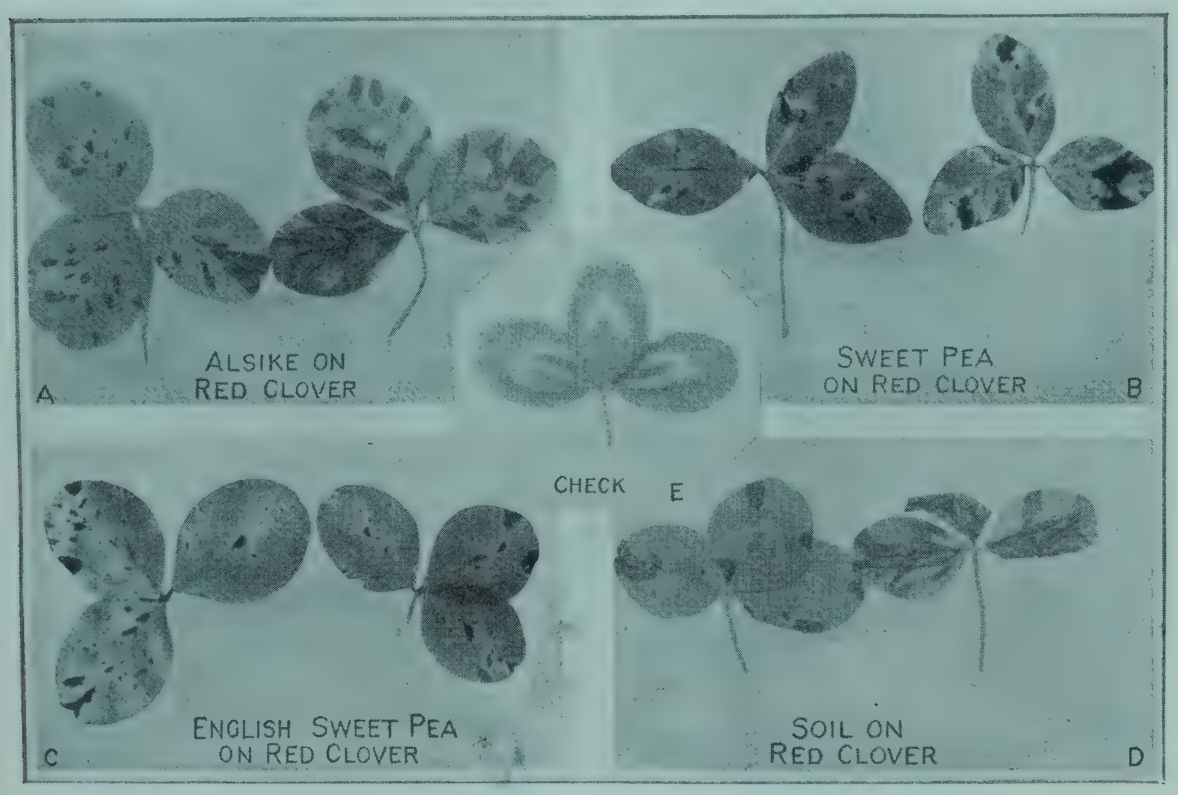


FIG. 97.—STREAK INDUCED IN CLOVER BY INOCULATION WITH BACILLUS LATHYRI.

CONCLUSION.

Having determined "streak" to be a disease of bacterial origin and a disease prevalent on the common Clovers, it is easy to understand why it should appear in plantings of Sweet Peas, where previously none had been grown. Further, it is safe to say that control measures will be along lines to prevent infected soil from being spattered on to the stems by rains or carried by other means, unless a successful spray can be found. We have made no efforts along preventive lines. On small areas probably a mulching of straw several inches thick along either side of the row may prevent distribution. *Thos. F. Manns and J. J. Taubenhaus*, Dept. of Plant Pathology, Delaware College Experiment Station, Newark, Delaware, U.S.A.

VENTILATION.

THE first and principal reason for ventilation in a structure in which plants are growing is to prevent the temperature from rising too high. The next is in order to change the atmosphere. Besides these two reasons, there is also that of the necessity, during still, mild, dull weather, when there is little difference between the internal and external temperature, of creating a buoyant atmosphere. When the structure contains plants in flower ventilation is also occasionally needed to dry the pollen sufficiently for distribution and so bring about pollination. There are times when too much ventilation may be given. During the autumn some growers throw their fruit houses wide open, in order, as they say, to ripen the wood. This object, however, could be gained in a better way by keeping the houses moderately warm, with just sufficient ventilation to prevent the atmosphere from becoming stagnant or humid. This is especially the case with vines. Peaches, we know, will not bear much autumn forcing, but even with these it is bad policy to keep a house wide open in all weathers during early autumn, before the buds have become sufficiently developed. Vines from which the fruit has been gathered, say, in August, will bear a considerable amount of heat. If the foliage which was formed early in the year is healthy, they can at this season be so aided in the matter of developing and maturing the embryo growths in the buds, as well as in storing starch, etc., for future use, that they will start much more freely in the spring and be better equipped during the season when they have to rely for a time solely on stored up food material. In Prantl and Vine's Text Book of Botany we read on the subject of a leaf enclosed in a leaf bud that "the cells, of which it will consist when mature, all exist already; and it is by their simultaneous increase in volume that the leaf attains its ultimate size." We know that the embryo flower is also in the bud, and must be treated as a living thing, just as a babe in the womb of its mother. Anything which checks the health of the mother will hinder the development of the child, and so it is with vegetable life. Anything which interferes with the manifold functions of the leaves is just as harmful in the autumn as in the spring, although the effects do not become manifest so quickly.



SIR TREVOR LAWRENCE, BT., K.C.V.O., V.M.H.

PRESIDENT OF THE ROYAL HORTICULTURAL SOCIETY,

1885 —— 1913.

Again, some growers will insist on ventilating their forcing houses during the night. What good can be effected by this? Heated pipes in the lower part of the house will cause effectual ventilation; there are no glass roofs fitted so closely but that some heated air can escape when it rises, and the rapidity of escape is governed by the difference between the inside and the outside temperatures. The main functions plants perform during darkness are expansion of stems and leaves (in proportion to their treatment and the natural conditions prevailing the previous day), and respiration or breathing. A Cucumber plant, when young and vigorous, with only a single stem, will grow two or more inches during the night, and an Ipomœa in a warm house nearly a foot. There is not likely to be a shortage of oxygen, for the plants require very little; and if ventilation is recommended with the idea of assisting the carbon dioxide to escape, I should reply that the amount of this gas produced during the night is insignificant. I do not know the proportion—perhaps in a small house it might be as much as that given out by a sleeping cat—but, whatever the amount, it will be useful in the morning as soon as the sun rises above the horizon, and the plants resume the work of feeding by means of their leaves. There are, of course, certain cases when it is excusable to ventilate a little during the night, as when a house faces the east, and the attendant prefers not to rise with the lark in the morning!

We may suppose that rigidly fixed temperatures in all weathers are now abandoned by intelligent cultivators. I remember the time when two degrees more or less than the regulation figure at night was an almost unpardonable offence, and led to practices which were not always honest on the part of the attendant; but there is still too much fidgetiness as to the day temperature. During the months of March and April it is often extremely difficult to know what to do for the best so as to keep the temperature suited to the occupants of a house. There is frequently strong sun heat accompanied by a gale, with intervals of passing snow or hailstorms; and this involves a continual progress from house to house to alter the ventilation. If this happens on a Sunday or holiday, when one man is in charge of a number of houses, it is impossible for him to attend to all of them at the critical moment. Some gardeners are averse from opening the lower ventilators during such weather, and it is not generally understood that plants will bear occasionally a temperature considerably higher than the regulation one, if the atmosphere is kept sufficiently humid. In some seasons I have allowed a vinery to remain for weeks in March and April without once opening the ventilators, and the temperature would fluctuate between 45° in the early morning and 95° or even 100° in the shade during the day. When it was absolutely necessary to give ventilation during typical March weather, it has been given at the lower part of the house. The ventilators situated there, if arranged so that the wind cannot blow directly on tender growths, may be slightly opened, even when the temperature has risen to a considerable height. It is not, however, safe to open the top under such conditions; and in no circumstances must sufficient ventilation be given to lower the temperature. If we are caught napping, and the thermometer reaches the danger point before ventilation is given, a little whitening and water sprinkled on the roof with a syringe will prevent any bad results. But this should only be practised in case of emergency, and the whitening must be washed off as soon as the danger is past.

Let us consider what happens when, in such weather as I have mentioned, sufficient top ventilation is given to prevent the temperature from rising above the regulation point. The inside atmosphere is humid, warm and comfortable; but outside it is comparatively dry between the storms, and the wind is rough. The plants seem to be enjoying themselves thoroughly, the stomata have opened widely, transpiration, respiration, feeding by the roots, and the assimilation by the leaves, are going on perfectly. The temperature may, however, rise too high, and it may be thought necessary to open the top ventilators. A very little aperture at the highest point in such weather will soon cause discomfort, and the several functions of the plants will be interfered with. There will be excessive evaporation from the atmosphere and from the surfaces of the leaves, also excessive transpiration from their interior parts, because the stomata cannot be regulated as quickly as we alter the ventilators. The leaves would probably droop, because the roots are incapable of meeting the increased demand for water. Another storm comes on, and before the attendant (who may be inexperienced, and not see it coming) can close all the houses under his charge, the temperature will have gone down to a very undesirable extent. The leaves, in self-defence against the harsh, dry outside air, have partially closed their stomata, and it takes some time after the house is closed for them to adapt themselves to the changed conditions. Meanwhile, all the functions of roots and leaves are checked. This may happen half a dozen times in a day; nature and man are pulling in opposite directions, and the beneficent sun sends out its rays to little purpose. Anything which will reduce to a minimum this state of affairs is worth considering. One suggestion is to ventilate only from below, but there are disadvantages in this method, and it is only to be practised on rare occasions when we have to choose the lesser of two evils, and it should be discontinued as soon as the sun begins to shine obliquely on the house. Another recommendation is to allow a rather higher temperature to prevail for short intervals without ventilation. A careful cultivator, who knows what he is about, and is not timid, will achieve wonderful results in such weather. Give him the sunlight, and he will make the very best of it; while the timid man, though he often wastes much fuel, is apt to be behind at harvest time, and his buds do not become well developed for the following year.

As an illustration of the high temperature which some plants, and even cuttings, will bear under certain conditions, I may mention that at the age of 17 I was responsible for the production of a hundred thousand bedding plants. This was at Shrubland Park, in Suffolk, where probably the most extensive flower gardening in the kingdom was carried on. It was the scene of the principal exploits of the celebrated Donald Beaton, who had retired a few months before the beginning of my gardening career. Verbenas were largely in request, and I hit on a plan of propagating them. Stable manure was prepared till it reached the condition old-fashioned gardeners call "sweet," i.e., it was turned every other day for three weeks, by which time there was no rank smell of ammonia. The manure would be partly decomposed, would continue to decompose without becoming dry, and would keep fairly hot for some months. The manure was placed in a pit, and two or three inches of soil thrown over it. Vapour would rise continually through the soil in sufficient quantity to produce something like a thin fog. Cuttings were inserted in pans or boxes and placed on the soil. The lights were then put on and fastened, so that no inquisitive person could easily open them; and although the month of April was the time preferred, the cuttings had no shade beyond that afforded by the vapour from the manure. I had already learned that it was unnecessary to waste a leaf, for the cuttings would root perfectly without being severed at a joint, and thus a great saving both of time and material was effected. Roots were produced in two or three days, and the plants started growing like young nettles. They continued to grow vigorously throughout the summer, and covered double the space of those struck earlier in the propagating house; the flowers were also finer, and were produced more continuously. Now, the heat in those pits must have been very great; but I never examined them during a hot day, because opening a light would have caused instant destruction, and I did not think of using a registering thermometer.

Cucumbers may also be grown without ventilation on hot-beds made in the way described, merely planting them on a mound in the middle of each light, and leaving the rest of the manure almost bare. We know, too, that some growers succeed with Cucumbers in an unventilated house, while others fail to do so. May not the failures be attributable to a deficiency of carbon dioxide? The amount of this gas in the ordinary atmosphere is only about one part in three thousand, and it is supposed, though I do not know if it has been proved, that plants will luxuriate in an atmosphere containing two per cent. The plants in such a hot and damp atmosphere as has been described will make abnormal growth; is it a wonder, therefore, that they should require abnormal feeding? In the pit they have this; but in a house without decomposing material they are denied it. It used to be a common practice to have a ridge of fermenting manure in an early vinery, and I have an idea that this is a better plan of securing a sufficiency of carbon dioxide than that which was made the subject of experiment by the Swedish savant who wrote in these columns last year, viz., having a cow house and a plant house communicating.

It is plain that unless the cows were fattening they would only be in their covered quarters at night, when the carbon dioxide is not required. If, on the other hand, they remained there during the day, the animals would require such a large amount of fresh air, that very little of their breath would be available for the plants.

Of course, manure must not be rank when placed in a house with plants bearing growing leaves. The ammonia should either have escaped or be chemically fixed. *Wm. Taylor.*

FLORISTS' FLOWERS.

GOOD MARKET CHRYSANTHEMUMS.

If a constant supply of blooms for market is to be maintained, varieties should be selected that will flower out-of-doors in the months of August, September, and October (under the protection of canvas during October), and under glass in November, December, and January. The following list may be recommended:—

(*Early-flowering varieties.*) Miss F. Collier, a fine reflexed white flower, of good habit; Roi des Blancs (King of the Whites); White Countess; Betty Spark, an excellent, free-flowering pink variety; Cranford Pink, a salmon-pink variety, excellent in every respect; Madame C. Desgrange, both the yellow and white varieties (the plant yields fine blooms if disbudded); and Polly, a free-flowering variety of a pleasing orange-bronze colour.

(*Mid-season and late varieties.*) Ryecroft Glory, a bronze-yellow variety, very free-flowering; Sunshine, golden yellow; Wells' Crimson, scarlet crimson, with gold tips; the bronze and yellow Soleil d'Octobre (these are varieties for flowering out-of-doors provided the plants are protected with canvas early in October, and transplanted under glass later); Mrs. Roots, a pure white, incurved variety, which does well under glass in October and November; Hortus Toulou, a golden-bronze variety, much in demand in November and December; Ethel Thorpe, mauve pink; Emblème Poitevine, a splendid yellow variety, flowering early in December; Winter Cheer, a sport from Framfield Pink, blooming in November and December; Madame R. Oberthur, a large, full, white flower, blooming in December; December Gold, with large golden-yellow blooms; Mrs. J. Thompson, a fine, late, free flowering creamy-white variety; Helston White and Helston Bronze, both of which yield fine flowers well into January.

The varieties enumerated flower approximately in the order in which their names are given. *H. W. W.*

The Week's Work.

FRUITS UNDER GLASS.

By James Whytock, Gardener to the Duke of Buccleuch, Dalkeith Palace, Midlothian.

Forcing Strawberries.—March has been a trying month—sunless and cold, with severe rain, and in some parts of the country even snow-storms. Such weather is very unfavourable to the ripening of early forced strawberries. Those plants whose fruits are now ripening should be given a temperature of 60° to 70°; fresh air must be freely afforded, otherwise the fruit will be flavourless, and if they are grown on a shelf near the roof glass they must be well watered with clear, soft water. Succession crops of which the fruit is swelling should be given a temperature of 65°, which may be increased 10° or 15° when the sun is warm. The foliage should be heavily syringed twice a day with warm, soft water, and the atmosphere must be kept moist, though a constant supply of fresh air must circulate at the top of the house to prevent closeness. The roots must not on any account be permitted to become dry, and must be liberally watered until the fruits begin to colour, giving manure water with every alternate moistening. If the pots are very full of roots and difficult to keep damp, place saucers or pieces of sod under the pots. To keep off insects the plants may be occasionally syringed with quassia extract, and in case of mildew appearing the foliage should be dusted with sulphur. The foliage of plants which are brought in to be forced should be thoroughly syringed with an insecticide before being placed on the shelves, and until they have set their fruits the temperature should be 55° at night, with a free circulation of air.

Melons.—Melons which are growing freely in their own house should be carefully trained to the trellis as they develop. The roots may be watered if the soil is dry, but the watering should not be done close to the collar of the plants. The soil can be prevented from drying too quickly by laying over the surface of the roots an inch or two of short manure; this also nourishes the plants when the fruits are swelling. The bottom heat temperature should be about 85°; the atmosphere at night should be 70° to 75°, according to the weather, rising 10° to 15° in the day when the sun is warm. In the morning the walls and paths should be damped, and in the afternoon of every bright day the foliage should be gently syringed. In dull, mild weather care must be taken not to allow the atmosphere of the house to become close and humid; ventilation must depend upon outside climatic conditions, usually increasing up to noon, and afterwards decreasing with the declining sun. Succession crops should now be planted, and the seed for later crops sown.

Cucumbers.—Cucumber plants in the forcing house which are now in full bearing should only be allowed to carry a crop sufficient to meet daily requirements, as over-cropping exhausts the vitality of the plants. The roots should be liberally supplied with water, and if the bed has hitherto been only partially made, it may now be completed, using the same compost, and adding a mulch of rotten manure. An occasional damping with manure water will help to keep the plants in a vigorous and fruitful condition. They should be regularly stopped and thinned: the growths should not be allowed to run beyond one or two joints. As the nights become milder and the heat of the sun more powerful the night temperature may be increased to 75°; when closing the house in the afternoon the foliage should be sprinkled with warm soft water, and a moist atmosphere maintained.

Tomatos.—The Tomatos raised from seed sown last autumn will now be carrying a crop of several trusses of fruit on each plant. They should be placed in a warm but airy house, near the roof glass. The leading shoot should be stopped, and the side shoots pinched as they appear. If the plants are in pots and the roots are numerous some rich top-dressing and frequent manure waterings will be beneficial; but as the fruits ripen over-watering must be guarded against, and only clear water must be used. Plants which are coming into flower should be in a dry, airy atmosphere, near the roof glass. The flowers should be examined and pollinated every day. Plants which have been raised from seed sown in February, now growing in small pots, should be transferred to large ones, and placed where they will get plenty of light and air.

PLANTS UNDER GLASS.

By F. Jennings, Gardener to the Duke of Devonshire, Chatsworth, Derbyshire.

Browallia speciosa major. — This useful flowering plant may be propagated either from seed sown at once or from cuttings taken from plants that were cut back in January. Insert the cuttings under a bell glass or box covered with glass, either in pots or dibbled into the soil. The compost should consist almost entirely of sand. When the cuttings have formed roots, pot them singly into small 60 sized pots, then soak the soil thoroughly with water and place the pots on a shelf in a stove or other very warm house. As soon as the plants commence to grow, pinch the leading shoot, and later shift them into their flowering pots, employing loam and leaf-mould in equal parts with coarse sand and wood-ashes to which a little peat and fine bones may be added. Grow the plants in a warm house during the summer, syringing and closing the house in the late afternoon. Stop the leading shoots to promote a bushy habit of growth. Plants required for flowering during October and onwards should be stopped not later than the first week in September. The temperature should not be allowed to fall below 55° at night. Browallias are very effective mixed with Codiaeums (Crotons) and other ornamental-leaved plants in the stove.

Azalea indica.—Pinch off the faded blooms from plants that have finished flowering, and shake the branches to cause old, yellow leaves to drop. Afterwards turn the plants out of their pots, and examine the drainage to see that it is in proper order. It is advisable to dip the shoots of the plants in an insecticide to destroy thrip, which often infests Azaleas. If necessary top-dress the roots with good peat mixed with a little soot. Keep the plants symmetrical in shape by stopping the stronger-growing shoots. When the plants have completed their growth they should be hardened gradually, and may be finally placed out-of-doors. Well syringe the growths during the summer, and house them before frosts appear.

Lilium tigrinum Fortunei.—Bulbs potted at this season and grown in the cool conditions provided by a north wall will bloom in the autumn and be very valuable for decoration of dwelling-rooms or tables. Care should be taken to feed the roots regularly, both with artificial manure and liquid stimulant made from cow dung. Guard against drought at the roots. Lilium speciosum (lancifolium) and its varieties, album, rubrum, and roseum, will also be found useful for late blooming, but it must be remembered that all Liliums require a certain amount of warmth to develop their flowers, which will fade if the plants are kept too late in the season in cold houses. It is imperative to bring the plants under glass before the nights turn damp and cold.

Clerodendron fallax. — If required for autumn-flowering a batch of plants should be propagated from cuttings taken from the old plants that were cut back in the early spring. The cuttings should be placed in a warm house under a bell-glass or frame and afforded gentle bottom heat. When they are rooted pot the cuttings singly in 60 sized pots, and place them in a warm house or stove near to the roof glass. For the second potting employ a compost consisting of rich loam and leaf-mould mixed with coarse sand and a small quantity of fine bones. Large, well-grown specimens are an acquisition in the stove house during the autumn months. This Clerodendron may also be raised from seed, which should be sown according to the period the plants are required to flower.

THE HARDY FRUIT GARDEN.

By B. Goodacre, Gardener to Sir Ernest Cassel, Moulton Paddocks, Newmarket.

Figs on Walls. — The protective materials whether mats or straw, should be removed from the trees. Little or no pruning will be necessary at this stage, provided the shoots were well thinned last autumn, but if the work was not done then the pruning should be undertaken at once. The best results are obtained from short-jointed branches; at this stage the operator may be guided as to which shoots to remove and which to retain by the presence of the fruits which have just begun to develop. In training the Fig, as in the case of other fruit-trees on walls, keep the upper part open to prevent overshadowing.

Apples and Pears.—There is yet time to graft these fruit trees, but the work should be finished as soon as possible. Endeavour to have a perfect union between the scion and stock, and place a layer of some material at the junction to exclude the air from the wound. Trees that have been grafted this season should be examined, and if the band of clay has dropped it should be replaced. It is an advantage to bind a layer of moss with broad raffia over the parts that are grafted, and to damp the moss during periods of dry weather to keep the stem and scion moist.

Peaches and Nectarines.—Continue to afford protection to these trees, but only when it is absolutely necessary. See that the coverings previously placed in position are not causing the shoots to grow weak and tender. If growth is forward the density of the covering may be reduced gradually. Where the walls are extra warm through the proximity of a chimney or flue a few shoots may be very early, and these should be pinched and disbudded gradually, but in all cases very sparingly, as the careless removal of young shoots at this time of the year only tends to delay the flow of sap, which is never too free at this stage. In view of the heavy storms of snow and wind lately experienced all over the country, newly planted trees and bushes should be examined to see if their roots have been disturbed through the swaying of the trees. The stakes are liable to become loose in soft, newly-trenched ground, and should be made firm again if necessary. See that the bark is not being rubbed where the trees are tied, and that the tie is not so tight as to prevent the tree from settling on a firm base. Where netting is placed around the stems of fruit trees to protect the bark from injury by rabbits and other animals, an inspection should be made on frequent occasions to see that the young rabbits, etc., have not entered through narrow spaces. Continue to shoot or otherwise destroy bullfinches, which will cause much damage to the buds of fruit trees as the season advances.

THE FLOWER GARDEN.

By Edward Harriss, Gardener to Lady Wantage, Lockinge, Berkshire.

The Rock Garden.—The Rock Garden should receive frequent attention at this season, as many of the plants are coming into bloom. The stronger-growing subjects must not be allowed to encroach on the space of the smaller plants, and should be cut back occasionally. Neither should the plants be allowed to unduly cover the stones. If these details are attended to at regular intervals, it will obviate cutting out large portions at one time.

Forced Plants and Bulbs.—Many of the bulbous plants which have been forced in pots or boxes may be planted out in the wilder parts of the garden next autumn, instead of being discarded. In the meantime the plants should be placed closely together in frames and supplied with water at the roots until the foliage has died down. Allow them to remain in the pots all through the summer, and then plant them along the banks of streams, by the side of woodland paths, or in the woodland itself. Astilbes (Spiræas) that have been forced may, provided they were not retarded crowns, be also planted by the banks of streams or ponds. In this case the planting should be done as soon as the stools have flowered. Forced Lilacs may be pruned hard and planted in open spaces in the wood-

land. Ghent Azaleas should be kept in a warm house until they have finished growth, when they may either be planted out-of-doors in specially prepared soil or allowed to remain in the pots until the autumn.

Bamboos.—A collection of Bamboos, if planted in suitable situations and kept within bounds, has much decorative value, especially during the winter months, but certain of the species, if allowed to grow without restriction for a number of years, assume large proportions, and may become an obstruction. Any plants which require reducing may be dealt with now. The outside portions of the clumps should be preserved for replanting, and opportunity taken to increase the stock if it is desirable. Before the work of replanting is done prepare the ground thoroughly by trenching or deep digging, and enrich the soil with plenty of manure. Should the ground be very poor some of the soil should be taken away and good loam substituted. The planting should be done when the soil is in such a condition that it can be well rammed, as it is important that the soil be made quite firm about the roots. A mulch of some material that will preserve moisture in soil should be placed over the roots, and, should dry weather occur after planting, keep the roots well supplied with water. Many Bamboos need an annual pruning and thinning. This work should be done before the new growths have made much progress, cutting out the old shoots as near to the base as possible.

Pampas Grass (Gynerium argenteum).—Although the Pampas grass will succeed for many years without replanting, this should be undertaken if the clumps show signs of deteriorating. The ground should be trenched deeply, and if the soil is of poor quality, add plenty of fresh loam and rotten manure. The stock may be readily increased by dividing large clumps, selecting the portions from the outsides of the plants for replanting.

THE KITCHEN GARDEN.

By John Dunn, Foreman, Royal Gardens, Windsor.

Cauliflower.—Autumn-sown plants which have been grown in pots through the winter should be fully exposed to the weather whenever it is favourable. Remove the lights entirely in the daytime and replace them at night, admitting as much air as the conditions will allow. Cauliflower plants in pots require extra careful treatment until they are ready for planting permanently, for if they are allowed to become too dry once at this season they will be almost certain to bolt. The ground for this crop can scarcely be of too rich a nature; the situation should be sheltered, as cold winds may prove injurious. The distance between the plants will vary with the varieties selected. Sutton's Magnum Bonum, which is largely grown in these gardens for early supplies, requires a space of 18 inches between the plants each way, whilst Early London, which is still one of the best varieties, should be not closer than 2 feet apart. After the plants have been set out-of-doors it is important to guard against drought at the roots, as this is a frequent cause of failure.

Tomatos.—Tomatos raised from seed sown a month ago for the crop out-of-doors should be ready for transferring to small pots. The soil for this purpose may consist of fine loam and leaf-mould in equal quantities, mixed with a little rough sand. Do not make the soil too firm. It is an advantage to afford the plants a mild bottom heat until root action has commenced, at which stage the pots should be removed to shelves fixed quite close to the roof glass in order to promote a strong short-jointed growth. When the pots are well filled with roots shift the plants into six-inch pots, in which receptacles they may remain until the time for planting arrives, when they should be set on a warm south border against a wall or fence. Tomatos out-of-doors should be allowed a space of three feet each way. A strong stick should be placed to each plant from the beginning, and the plants trained to single stems, removing all side shoots as they appear. When sufficient fruits have set, the tops of the stems should be pinched out, in order to hasten the development of the crop. Tomato plants in pots which have set a sufficient crop should receive frequent applications of liquid manure from the farmyard. If this stimulant is not available a sprinkling of "Le Fruitier" on the surface of the pots will be beneficial. Remove all side shoots and increase the temperature of the house to 65° at night, and 75° by day with sunshine. Plants raised from seeds sown early in February are ready for shifting into ten-inch pots, and they require a compost composed of three parts turfy loam and one part decayed farmyard manure.

Mushrooms.—A bed may be made to furnish a supply of Mushrooms in June, preferably in an open shed with a north aspect. When sufficient materials have been collected and prepared, they should be trodden tightly together on the floor of the shed to a depth of about 18 inches. Insert the spawn when the temperature of the bed is about 80°. When the heat begins to decline place a covering of straw on the bed to prevent the temperature dropping too rapidly. About the end of May Mushrooms will begin to appear, and an examination should be made to ascertain if moisture is required. Should this be necessary give a gentle watering of rain water, and, on the following day, replace the covering material to prevent evaporation. The atmospheric temperature of Mushroom houses from which supplies are being gathered should be maintained at 55°.

Cucumbers.—Plants grown on hot beds in pits or box-frames will furnish a supply of Cucumbers through the summer. Collect a quantity of stable manure and leaves and mix them together in the open yard, turning the mass every second day for a week before the bed is made. If box-frames are used the hot-bed should be at least 3 feet wider than the frame, thus allowing a margin of 18 inches all round on which to place fresh fermenting materials later. The seeds should be sown singly in small, clean pots and germinated on a hot-bed. Cover the pots with glass, and allow a small space for moisture to escape, but not sufficiently wide for mice to reach the seeds. See that the bed does not become too hot through excessive fermentation, or the seeds may be damaged. When the plants have made two rough leaves they may be planted on mounds of light, rich soil. As soon as roots show through the soil pinch out the tops of the plants so that several leading growths may be produced from the base. Train the shoots on the surface of the bed and stop them when they have grown about 18 inches. Before the shoots extend too far the bed should be made up with sufficient soil to carry the crop throughout the season. Careful attention must be paid to stopping and thinning the shoots throughout the season, or the pit will soon become crowded with foliage. It is much better to thin and stop the plants once or twice weekly than to cut large quantities of foliage from them at one time, as this may cause a severe check to the crop. During the time the plants are growing and fruiting freely they may receive frequent waterings of weak liquid manure. Admit air with caution; it is better to shade the pit lightly on sunny days than to admit a large quantity of cold air. Dickson's All-the-Year-Round is one of the best varieties for growing in pits.

THE ORCHID HOUSES.

By W. H. White, Grower to Sir Trevor Lawrence, Bart., Burford, Dorking.

Deciduous Calanthes.—These plants should be overhauled thoroughly. Turn them out of their pots, remove every particle of the soil and examine each pseudo-bulb closely for the presence of scale insects and mealy bug, which may often be found clustered at the base of the growths. Cleanse each pseudo-bulb, taking care not to rub or injure the "eyes" at the base. After shaking away the soil cut off the dead roots to within about 1 inch, to form stumps that will help to keep the plants firm in the fresh compost. Probably a number of these plants will be found ready to be repotted at once. It is probable that certain of the plants have started well into growth and are furnished with new roots; these may be potted without further delay. Others that have not yet commenced to grow may be placed in boxes or singly in small pots, with a little dry Sphagnum-moss around their bases. In a short time the plants will commence to grow, when they should be repotted. The usual practice is to plant the pseudo-bulbs singly, but if house room is limited 5 or 6 moderately sized pseudo-bulbs, or 3 to 4 large ones, may be placed in each 7-inch pot. The same number of pseudo-bulbs, but of smaller size, may be potted in 6-inch pots. My practice is to place the larger plants singly in 6-inch pots, and those of lesser size into pots varying according to their requirements. Plenty of drainage materials should be employed; the pots should be about half-filled with clean crocks covered with a thin layer of fresh, turfy loam or rough Sphagnum-moss. The soil should consist of half turfy loam, one-fourth chopped Osmunda-fibre, one-fourth dry cow-dung or well-decayed leaf mould, with a moderate quantity of chopped Sphagnum moss, small crocks and coarse silver sand. The materials should be well mixed together. In repotting, arrange the soil with moderate firmness to within 1½ inch of the top of the receptacle, then place the pseudo-bulbs on the surface, and add sufficient soil to just cover the base of each growth. This will leave sufficient space for a top-dressing of fresh mould when the plants are established. These Orchids should be grown in the lightest position in the hottest house, but some cultivators grow them perfectly in the plant stove, Pine pit, or Cucumber house, the heat and moisture of these houses being suitable to Calanthes all through their growing season. Do not water the roots until the plants have been potted for two or three weeks, unless some of the stronger growths make unexpected headway; merely syringe between the pots occasionally according to the condition of the weather. When the new shoots begin to grow freely, and the roots cling to the sides of the pot the quantity of moisture may be increased gradually. When the plants are well established they require an abundance of water, and on alternate waterings liquid manure made from cow-dung. Inexperienced cultivators should be very cautious in affording water to these plants during the early stages of growth, for if the soil in the pots is allowed to become excessively moist at any time it may result in the lips of the young leaves becoming discoloured and ultimately black. Unless the temperature of the house is very high syringing the young growths overhead should not be practised, especially in the late afternoons, as oftentimes during the months of April and May the nights become quite unexpectedly very cold and a low, damp night temperature may cause the leaves to become spotted and diseased. During the early stages of growth the young, tender leaves should not be exposed to strong sunshine; it will suffice to break the rays if the roof-glass immediately over the plants is stippled as thinly as possible. We use a mixture of white lead and paraffin, and apply it when the sun is shining full on the glass. These Calanthes may be readily propagated from the back pseudo-bulbs removed previous to repotting and inserted closely together in pots or shallow pans filled with Sphagnum-moss, but affording no water. Place the plants in a light position, and when the young growths commence to push repot as previously advised. Calanthes of the Regnieri section are in bloom. These plants prolong the season when Calanthes may be had in flower, and are cultivated with rather more ease than those of the C. vestita section. Seedlings should be potted. The best method is to place five or six of the small pseudo-bulbs around the rims of the smallest-sized pots, and to suspend them near to the roof-glass in a warm, moist house. When the new roots appear the plants should receive similar treatment to that advised previously for the older specimens. Plants bearing capsules should be stood in a sunny position to mature and ripen the seed. When the pods appear to be bursting, a piece of tissue paper should be tied around them to prevent loss of seed. Keep the seeds perfectly dry until those plants that are now being repotted begin to root, when they may be sown on the best rooted specimens. The plants upon which the seed is sown should not be watered in the ordinary way, but the surface kept moist by means of a fine sprayer. The seeds will soon germinate, but the seedlings should not be disturbed until the following spri

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the **PUBLISHER**, 41, Wellington Street, Covent Garden, W.C.

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS**, 41, Wellington Street, Covent Garden, London. *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

Special Notice to Correspondents.—*The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

Illustrations.—*The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable plants, flowers, trees, &c., but they cannot be responsible for loss or injury.*

Newspapers.—*Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see.*

APPOINTMENTS.

SATURDAY, APRIL 5—
Soc. Française d'Hort. de Londres meet. New York International Fl. Sh. (8 days).

MONDAY, APRIL 7—
Surveyors' Inst. meet.

TUESDAY, APRIL 8—
Cornwall Daff. and Spring Fl. Sh. at Truro (2 days). Devon Daff. and Spring Fl. Sh. at Barnstaple (2 days)

WEDNESDAY, APRIL 9—
Roy. Caledonian Hort. Soc. Spring Sh. at Edinburgh (2 days). Tewkesbury Daffodil Sh.

THURSDAY, APRIL 10—
Perpetual-flowering Carnation Soc. Sh. at Leamington (2 days).

MONDAY, APRIL 14—
United Hort. Ben. and Prov. Soc. Ann. meet.

TUESDAY, APRIL 15—
Roy. Hort. Soc. Coms. meet Daffodil Sh. (2 days). (Lecture by Rev. Prof. G. Henslow on "The Origin of Life—why it is undiscoverable.")

WEDNESDAY, APRIL 16—
R.H.S. Bulb Sh. and Primula Conference. Roy. Hort. Soc. of Ireland Spring Fl. Sh. (2 days). Co. Clare Hort. Soc. Spring Sh. Roy. Meteorological Soc.

THURSDAY, APRIL 17—
Ipswich Fl. Sh. Linnean Soc. meet.

MONDAY, APRIL 21—
Surveyors' Inst. meet.

WEDNESDAY, APRIL 23—
R.H.S. Exam. in Cottage and Allotment Gardening. Midland Daffodil Soc. Sh. at Birmingham (2 days). N. of England Hort. Soc. Spring Sh. at Leeds.

THURSDAY, APRIL 24—
Norwich Spring Fl. Sh. 25 (F.).

SATURDAY, APRIL 26—
Ghent Quinquennial Exh. (9 days).

TUESDAY, APRIL 29—
Roy. Hort. Soc. Coms. meet, and Nat. Auricula and Primula Soc. Sh. (Lecture at 3 p.m. by Mr. G. Bunyard, on "Spring Border Plants.")

WEDNESDAY, APRIL 30—
Nat. Auricula Soc. (Mid. Sect.) Exh. at Birmingham Bot. Gdns. (2 days).

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich—46.1.

ACTUAL TEMPERATURES:—
LONDON.—*Wednesday, April 2* (6 P.M.). Max. 54°; Min. 36°.
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—*Thursday, April 3* (10 a.m.): Bar. 29.8. Temp. 53°.
Weather—Sunshine.
PROVINCES.—*Wednesday, April 2.*—Max. 49° Norwich; Min. 44° Preston.

SALES FOR THE ENSUING WEEK.

MONDAY AND FRIDAY NEXT—
Liliums, Gladiolus, Begonias, and other Hardy Bulbs, at 12; Roses and Fruit Trees, at 1.30. At 67 & 68, Cheapside, E.C., by Protheroe and Morris.

WEDNESDAY NEXT—
Hardy Bulbs in variety, hardy herbaceous and other Plants, at 12; 5,000 Roses at 1.30; Palms and Plants, at 5. At 67 & 68, Cheapside, E.C., by Protheroe and Morris.

FRIDAY NEXT—
Choice Orchids from the Hey House collection. At 67 & 68, Cheapside, E.C., by Protheroe and Morris, at 12.45.

Retirement of Sir Trevor Lawrence.

At the meeting of the Council held on April 1 Sir Trevor Lawrence, Bart., tendered his resignation of the Presidency of the Royal Horticultural Society. The resignation was accepted with the deepest regret, and Lord Grenfell was appointed to the office. The services rendered by Sir Trevor to the R.H.S. and to horticulture in general have laid the Fellows—and, indeed, all who are interested in horticulture—under an immeasurable debt of gratitude, and therefore a short account of his life and work will be welcomed by all.

Sir Trevor Lawrence (whose portrait is reproduced in our supplementary illustration) was born in London, on December 30, 1831. He is the only son of Sir James Lawrence, the first Baronet, who was a celebrated physician and surgeon of his time. Sir Trevor learnt his intense love of flowers and plants—especially of Orchids—from his mother, who had been a Miss Senior, of Broughton House, Buckinghamshire. He was educated at Winchester, and subsequently qualified for the medical profession at St. Bartholomew's Hospital. For ten years he served on the Army Medical Staff in India, and was there during the time of the Mutiny. He succeeded to the Baronetcy in 1867, and in 1869 married Elizabeth, the daughter of John Matthew, Esq., of Burford, near Dorking, by whom he has three sons and one daughter. From 1875 to 1892 Sir Trevor sat as a Member of Parliament, first for the Mid-Surrey division, and later for Reigate.

In 1885 he succeeded Lord Aberdare as President of the Royal Horticultural Society, which was passing at that time through a period of great difficulty. A large number of Life Fellows had been created, and the fees thereby gained had been expended in the erection of new buildings, etc., at South Kensington. The Council thus found itself confronted with the task of maintaining the Society, consisting of a large number of Fellows, on the income derived from the annual subscriptions of a few. Sir Trevor Lawrence devoted the first two or three years of his tenure of office to finding a way out of the impasse thus created; but all his efforts only served to show clearly that there were only two alternatives before the Society; either to allow itself to die an ignominious death, leaving behind it a mass of unpaid debts; or to abandon the idea of sustaining any social efforts (such as lawn-tennis grounds and pleasure gardens at Kensington), and to devote itself entirely to Horticulture. Sir Trevor Lawrence refused to contemplate the former alternative, and threw himself heart and soul into the advocacy of the latter, although he saw clearly that the result would be an open rupture with those of his colleagues who did not agree with it. Towards the close of 1887, therefore, he instituted a series of Conferences with the Fellows of the Society, in one of the rooms adjoining the new Albert Hall. Several of the members retired in dudgeon; but their departure, however to be regretted on sentimental grounds, certainly left the way clear for the younger and more enthusiastic members, amongst whom were Mr. (now Sir) Daniel Morris (who accepted the office of Treasurer) and the Rev. W. Wilks, who became the Secretary. Other members who joined at this time were Mr. T. B. Haywood, Mr. Geo. Paul, Mr. A. H. Smee, Mr. (now Sir) Harry Veitch, and Mr. J. Woodbridge. Supported by these members, and by Baron Schröder, who had been elected previously, Sir Trevor began to make headway, the Society was re-organised, and placed on a firm horticultural basis. The trammels of South Kensington, and all that they implied, were not unwillingly thrown off, and a new temporary office for the Society was found in rooms at 117, Victoria Street, while the fortnightly shows were held in the London Scottish Drill Hall, Buckingham Gate. From this time the fortunes of the Society began to mend, and they have prospered increasingly ever since.

As President of the Society, Sir Trevor Lawrence has taken more than his full share of work and responsibility. Members have recognised in him the ideal President and his chairmanship has been marked always with perfect tact. A striking testimony to his powers is the fact that since 1887 there has been only one serious dissension in the Council, and perhaps the story of this occurrence shows his tact and wisdom at their best. The disagreement arose on the question of the most fitting manner in which to celebrate the Centenary of the Society. It was agreed by everyone that a new hall was required, and by many that a new garden would be desirable. The cost of the hall was ascertained, but when it was discovered that at least £50,000 would be required most of the members despaired of raising such a sum. The Council therefore decided unanimously to recommend the garden, although it was aware, from the emphatic stand made by this Journal in favour of the Hall and from the widespread sympathy which our action called forth, that the great majority of the Fellows was opposed to the idea. With this unpopular recommendation the Council came before a general meeting of the Fellows. The situation was saved by the President, who, in an excellent speech, explained to the Fellows that the sole reason for the abandonment of a building scheme was the apparent impossibility of raising the money, although it was plain that this would be by far the most useful memorial. The speech was entirely successful. Three Fellows rose, one after the other, and offered £1,000 each if the Council would adopt the scheme for a new hall; and Baron Schröder, who was sitting next to the President, whispered that he would give £5,000. Sir Trevor himself added £500 and Lord Ilchester £300. Thus in the space of a few minutes the promise of nearly £10,000 was obtained, and the President announced that, after so practical a demonstration of the views of the Fellows, he, on behalf of the Council, reversed the policy which had been placed before the meeting, and decided that the Centenary of the Society should be celebrated by the erection of a

hall. He added that the garden, greatly as it was needed, must wait for the present.

Sir Trevor's bold and wise action in executing this striking "right about face" in the name of the Council without waiting to consult his colleagues was resented by several of the members, and three of them resigned in consequence. The President, however, did not act without thought. Recognising that delay in this emergency would be fraught with danger, "he grasped the skirts of happy chance" and, soldier fashion, took the risks of receiving "the blows of circumstance."

Such is the history of the unique disagreement in the Council during the whole period of Sir Trevor Lawrence's Presidency since 1887; and, much as he regretted the loss of his three colleagues, he felt—and feels—that he did right to reverse the previous decision of the Council, since it was made on insufficient grounds. No coup d'état recorded in history has more absolutely justified itself by its results. Not only did the Society thereby become possessed of the magnificent hall and offices in Vincent Square, but the proceedings at this memorable meeting bore consequences of an important nature in the subsequent gift to the Society by Sir Thomas Hanbury of the 70-acre garden at Wisley.

All those who have served on the Council of the Society can testify to the perfect courtesy and urbanity—tempered, when need be, with firmness—with which Sir Trevor has always presided. The Secretary and all the office staff, both in London and at Wisley, have received from the President unvarying kindness and consideration. His impending retirement is as great a blow to them as it is to the members of the Council and the Fellows of the Society. All who have worked with him have complete confidence in his judgment and determination.

Sir Trevor is, moreover, not only a man of the world in the best sense of the phrase; he is also a man of the horticultural world, knowing its needs, and caring for its interests. He is perhaps best known as a keen collector of Orchids; indeed, he may be said to occupy the leading place among orchidists. One of his hobbies is the acquiring of new species of these plants, and he is eminently successful in their cultivation. Probably this latter fact is due to the great personal interest he has always taken in the study of his Orchids—not only in the collection as a whole, but in the individual plants, the history and requirements of each being the subject of careful and assiduous attention.

We have frequently had the pleasure of inspecting the collection of Orchids at Burford under the guidance of Sir Trevor Lawrence, and many interesting stories can be called to mind of experiments made with refractory subjects, some of which remained obdurate to the last, though in many cases the experiments were successful. In extent and variety the Burford collection has never been surpassed; and, while the collecting of rare and curious species and showy genera has always been the owner's chief object, the raising of hybrids has been by no means neglected, with the result that many fine novelties have originated at Burford.

Sir Trevor Lawrence has exhibited some thousands of new and rare plants at the Royal Horticultural Society's meetings during the past thirty or forty years, and the published lists of awards issued by the R.H.S. show that he has been not only one of the largest, but also the most successful exhibitor. Certain genera—as, for ex



Photograph by H. N. King.

Fig. 98.—BURFORD LODGE, DORKING: THE RESIDENCE OF SIR TREVOR LAWRENCE, K.C.V.O.

ample, the genus Polystachya—have been in cultivation first in Sir Trevor Lawrence's collection. It is interesting to find here plants of the first importation of Odontoglossum crispum (Alexandræ) still in robust health; and many original plants, such as Trevoria chloris, which have never again been collected, are still represented in the Burford collection in undiminished vigour. Better-known Orchids which display their longevity at Burford are Phalænopsis, specimens of which have been there for many years past; Odontoglossum Rossii and O. pulchellum, which have been in the collection for thirty years, were shown at a recent meeting of the Royal Horticultural Society. The collection also includes a fine specimen of Sophronitis grandiflora, at present bearing nearly one hundred scarlet flowers; the beautiful blue Dendrobium Victoria Regina; Cirrhopetalum Cumingii, carrying at the present time twenty flower-spikes; Oncidium incurvum, with twenty-seven spikes, although the plant has been grown at Burford for a quarter of a century; Platyclinis filiformis, with a shower of elegant yellow sprays; and Dendrobium Hookerianum, a difficult plant to cultivate, but which flowers profusely in this collection.

We conclude by offering to Sir Trevor, on behalf of all horticulturists, our grateful thanks for his services in the interests not only of Orchid growers, but of horticulture in general, and our sincere wishes for his long continued health and happiness.

THE R.H.S. COUNCIL.—As announced in our leading article, Sir TREVOR LAWRENCE resigned the office of President on April 1, and Lord GRENFELL was elected in his stead. At the same meeting Sir TREVOR LAWRENCE proposed that Sir HARRY VEITCH be appointed Deputy-Chairman of the Council. In moving the proposition Sir TREVOR observed that the suggestion conveyed to Sir HARRY VEITCH the expression of esteem in which he is universally held, and embodied also a compliment to the Horticultural Trade, which has done so much for the industry and art of gardening in this country. The motion was seconded by Sir GEORGE HOLFORD, and was carried unanimously.

KING GEORGE PRESENTS A CUP FOR ROSES.—The KING has presented a Silver Challenge Cup to the Windsor, Eton and District Rose and Horticultural Society, to replace KING EDWARD VII.'s Cup, which was won outright last year. The new trophy will be held only from year to year by the winners. The annual Show is to be held, by the KING's permission, on the slopes of Windsor Castle on June 28.

PROFESSOR HUGO DE VRIES.—The distinguished botanist and student of genetics, Professor DE VRIES, of Amsterdam, has been elected corresponding member of the French Academy of Science. Professor DE VRIES, who has made many important contributions to science, is best known in this country as the discoverer of the remarkable mutations of Œnothera Lamarckiana. He was invited some years ago to deliver the first Masters' lecture before the Royal Horticultural Society.

PROFESSOR B. T. GALLOWAY.—The appointment of Professor GALLOWAY, formerly Chief of the Bureau of Plant Industry of the United States, to the Assistant-Secretaryship of the Agriculture Department (U.S.A.) has given great satisfaction to horticulturists in America. Professor GALLOWAY, as is pointed out in the *Florists' Review* (March 17, 1913), did admirable horticultural work in his former post, and may be trusted to continue his active efforts on behalf of American horticulture. The new Assistant-Secretary served as Assistant in the Department of Horticulture in the University of Missouri, became Pathologist in the U.S.A. Department of Agriculture in 1887, and was appointed Chief of the Bureau of Plant Industry in 1900.

TESTIMONIAL TO A NURSERY MANAGER.—Mr. ALEXANDER MACKENZIE is retiring from the position of manager to Messrs. METHVEN, and Sons, at their Warriston Nurseries. He has held this position for forty-five years, and his many horticultural friends have decided to make him a presentation to mark the occasion of his retirement. A committee, of which Mr. DAVID KING, Osborne Nursery House, Murrayfield, is chairman, has been formed to receive subscriptions.

CONGRESS OF HORTICULTURE, PARIS, 1913.—The 26th Congress organised by the National Society of Horticulture of France will be held in Paris on May 22. The President of the Organising Committee is Mr. ALBERT TRUFFAUT, and Mr. GEORGE TRUFFAUT is Secretary. Among the subjects to be considered by the Congress are the influence on vegetation of soil-sterilisation by heat or antiseptics, experiments on the cure of chlorosis by chemical agents, and the study of modern methods of heating glasshouses by hot water, steam and electricity.

LEAMINGTON CARNATION CARNIVAL.—Special railway facilities have been arranged for those intending to visit this exhibition on April 10 and 11, which will be held in conjunction with the Perpetual-Flowering Carnation Society. The G.W.R. and L. and N.W.R. are issuing cheap return tickets at the rate of a single fare and a third (minimum 1s.). The tickets are available by any train starting up to 12.0 noon, from all stations within a radius of thirty miles from Leamington, but can be used only on the day of issue. The return fare from London (Paddington or Euston) is 13s. 9d. third class.

NEWCASTLE FLOWER SHOW.—The Newcastle Flower Show is to be re-organised, and a special appeal has been made by the Society for funds towards clearing off the deficit of £400.

MR. CHARLES TELLIER.—The modern industry of cold storage owes its origin to Mr. CHARLES TELLIER, and having regard to the enormous growth of this industry it is fit and proper that the originator should receive adequate recognition. Mr. TELLIER, who is 86 years of age, has just been the recipient of two marks of distinction. He has received the Cross of the Legion of Honour and the sum of about £8,000 raised by international subscription at the instance of the Cold Storage Association. The importance of the industry which Mr. TELLIER founded may be judged from the fact that the Association just referred to is about to hold its third conference. The conference will take place in September and will be held in the United States.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT SOCIETY.—The annual meeting of this Gardeners' Benefit Society will be held in the R.H.S. Hall on the 14th inst., at 8 p.m. Mr. CHAS. H. CURTIS will preside.

LIVINGSTONE AS A BOTANIST.—An interesting and apposite article by Sir H. H. JOHNSTON on "LIVINGSTONE as a Man of Science," is published in *Nature*, March 27. In the course of his account of LIVINGSTONE'S contributions to geography, geology, zoology, and botany, Sir HENRY JOHNSTON recalls the facts that LIVINGSTONE made important botanical collections in the course of his travels and amassed innumerable notes on botanical subjects. Those relating to the Zambesian flora are incorporated in "The Flora of Tropical Africa." It was his discovery of fossil Araucarias in the rocks of the Central Zambesi Valley that led LIVINGSTONE to conjecture an ancient land connection between South Africa, Australia and South America.

THE FRENCH SOCIETY OF CHRYSANTHEMISTES.—The eighteenth Congress of this Society will be held at Ghent, and will take place probably on October 26. There will be held at the same time an exhibition of Chrysanthemums. The subjects to be studied at the conference will include the Insect Pests and Diseases of Chrysanthemums, the influence of magnesium salts, and the effects of sulphur and sulphur compounds on the growth and diseases of the Chrysanthemum.

MR. W. BOTTING HEMSLEY.—We understand that Mr. W. BOTTING HEMSLEY, F.R.S., has accepted the offer of the Honorary Degree of LL.D. from the University of Aberdeen, though he was unable to attend the recent graduation ceremony.

THEFT OF ORCHID POLLEN AT THE R.H.S. SHOW.—A complaint was made to the secretary of the Orchid Committee by Mr. F. M. OGILVIE on Tuesday last that soon after the awarding of a first-class certificate to his Brasso-Cattleya Cliftonii magnifica the pollen was stolen from the flower. In view of the risk in exhibiting rare plants, disclosed by this incident, Mr. OGILVIE thinks that the Council should be recommended to take measures to prevent such occurrences. A member of the Committee stated that on two occasions he had suffered similar experience.

SALE OF ORCHIDS.—A sale of duplicate plants from the Orchid collection of F. MENTEITH OGILVIE, Esq., The Shrubbery, Oxford, was held at Messrs. Protheroe and Morris's auction rooms on Tuesday last. The sale proved highly satisfactory, 162 lots realising approximately £1,200. We give the prices of the more important varieties:—Cattleya Trianæ, The Premier, 36 guineas; C. T. Grand Monarch, 100 guineas; Odontoglossum Ossulstonii Shrubbery variety, 36 guineas; O. crispum Magnum Bonum, 38 guineas; O. Pescatorei Duchess of Westminster, 40 guineas; Miltonia vexillaria Memoria G. D. Owen, 120 guineas; and Brasso-Cattleya Cliftonii magnifica, 210 guineas. The sale was attended by many leading Orchidists or their representatives.

THE AMERICAN AMBASSADOR.—Mr. WALTER PAGE, the new American Ambassador, has played an active and distinguished part in the intellectual life of the United States. As a member of the publishing house of DOUBLEDAY, PAGE and Co. he is responsible for the issue of the *Garden Magazine* and *Country Life in America*, periodicals which have done much to develop good taste in horticultural matters, and to extend the love of gardening among the American public. For many years Mr. PAGE has recognised that America, no less than this country, has a rural problem, and by removing the publishing house of his firm from New York to the Garden City, Long Island, he has proved the possibility of carrying on a typically town industry in a rural district. The new Ambassador possesses in a high degree that truly American characteristic of "splendid optimism" which, seeing a good goal, pushes so swiftly to it that the difficulties which stood in the way of its achievement are left far behind and powerless to hinder. To spend a day in the society of Mr. PAGE is to refresh one's belief in humanity. A strong man of quiet manner, courteous and cultivated, Mr. PAGE is never happier than when, under the charm of his hospitality and guidance, the English visitor discovers that America is no less the home of hustle and hard business than the centre of sustained and gigantic efforts to increase knowledge, to add to the amenity of life, and to increase the fund of common happiness. Mr. PAGE has many

friends among us eager to welcome him. He will sustain worthily the high tradition of the American Embassy in this country, and among no class will he make more numerous friends than among the growing band of those who are interested actively in the extension and amelioration of rural life.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

Effects of the Weather at Welshpool (see pp. 99, 171).—Our lowest shade temperature this winter at 4 feet from the ground was 17° of frost on November 8, after a period of open, mild weather. Roses of all sections appear to have withstood the winter well, but as there has not been much bright sunshine up to the present, the full effects of last season's late, sappy growth is not fully apparent. Good plants of Veronica salicifolia, V. Traversii, V. Burkii, V. japonica, and the variety Autumn Glory have not been damaged, but V. Andersonii is badly injured, although planted in a sheltered and protected position. Ericas, with the exception E. arborea which had the tips of its longest branches cut, are quite unharmed. We have been enjoying the delicious perfume of E. arborea for some time. Hydrangea hortensis has been cut to the ground level. Plants of Abutilon vitifolium trained on the wall, and others in the open, have escaped injury. Young plants of Leptospermum scoparium, 2 feet high, have lost their leaves at the tips of the growth. It is strange that the best-protected plants have suffered most. A specimen of Solanum jasminoides, 10 feet high, planted last season against a south wall, shows very little damage. Cotoneaster angustifolia, as usual, has lost 6 inches of the tips of its branches; this plant flowered well last season, and set a good crop of berries, which ripened to a brown-green colour, quite unlike the beautiful orange-yellow berries we saw in pictures when the plant was introduced. Garrya elliptica has suffered most here; plants 5 feet high have about one-third of the branches killed for one-third of their length. I was interestd to read on p. 165 that Azara microphylla had not opened its flowers at Aldenham House gardens. A specimen growing in a somewhat exposed position here, at an altitude 600 feet, has been in flower since March 3. *John Edwards, Sylfain Gardens, Welshpool.*



Photograph by H. N. King.

Fig. 99.—THE GROUNDS AT BURFORD LODGE, NEAR TO BOX HILL

International Congress on Forestry.—I am requested by the Committee of the Touring Club de France to announce that an International Congress on Forestry is to be held in Paris from June 16 to 20 next. The Club have for many years taken an active and practical interest in the promotion and development of the science of forestry, and this Congress is to be convened under their auspices. It is honoured by the patronage of the President of the Republic, the Minister of Agriculture, and the principal Secretaries of State. I am requested to add that the secretary of the Committee of Organisation, Siège Social, Touring Club de France, 65, Avenue de la Grande Armée, Paris, will be glad to give information respecting the Congress, the facilities afforded to those who attend it, and the inspection of various French forests that are to be made under its auspices. *Edwin H. Freshfield, Delegate to the Touring Club de France in London, New Bank Buildings, 31, Old Jewry.*

Sulphur for Chrysanthemums.—On page 412, in the issue of the *Gardeners' Chronicle* for November 30, 1912, Mr. Méker is reported to have recommended (in *La Revue des Chrysanthémistes*) the use of sulphur in the soil of Chrysanthemums. He advises that sulphur be added to soil in which either cuttings or large plants are growing in the proportion of ¾lb. of sulphur to 100lb. of soil, chiefly as a preventive of mildew and rust. Curious to see the result of such treatment, I employed it with two separate batches of cuttings, which were inserted in December and January respectively. The cuttings were placed in a propagating frame, and received the same attention as in previous years; but they flagged at once, and did not regain their freshness even when well sprayed. By the end of February the majority of the December batch had made roots two or three inches in length, but the extremities were decayed. Of the batch inserted in January only a few had made roots at all, although most of them had formed callus. As the result of the sulphur seemed so unsuccessful, I removed the whole of the cuttings from the pots, and placed them in perfectly fresh soil, without sulphur. The cuttings immediately recovered their health and vigour, and in a few days all were making fresh, clean roots, and had begun to grow. If any other readers have tried this experiment, I should be glad to know if their experience was similar to mine. *F. F.*

SOCIETIES.

ROYAL HORTICULTURAL.

April 1.—The exhibits at the meeting on Tuesday last in the Society's Hall, Vincent Square, Westminster, were mainly of hardy flowers, and numerous rockeries were utilised for their display. The only exhibit in the Fruit and Vegetable section consisted of two new varieties of Apples.

Orchids were numerous, and the Orchid Committee recommended five First-Class Certificates and three Awards of Merit to novelties.

At the three o'clock meeting of Fellows a lecture on "The Literature of the Rose" was delivered by Mr. George Paul.

Floral Committee.

Present: H. B. May, Esq. (in the chair), W. J. Bean, W. J. James, W. Bain, J. Dickson, J. Jennings, C. R. Fielder, W. Howe, A. Turner, C. E. Shea, C. E. Pearson, E. Mawley, F. Page Roberts, W. P. Thomson, E. H. Jenkins, G. Paul, C. T. Druery, J. Green, W. A. Bilney, J. W. Moorman, T. Stevenson, J. Hudson, J. W. Barr, B. Crisp, G. Gordon, R. C. R. Nevill, and C. Dixon.



Fig. 100.—view in sir trevor lawrence's garden, showing lilium sulphureum in flower.

Messrs. W. Paul & Son, Waltham Cross, exhibited a collection of Roses in pots. The group was backed by tall varieties, such as Rowena, Fairy, and Tausendschön. Of the others Mrs. Charles Hunter and Juliet were very attractive. (Bronze Flora Medal.)

Mr. G. Prince, Longworth, Berkshire, showed a very varied collection of Roses in excellent condition. The varieties Mrs. W. J. Grant, Lady Hillingdon, and Rayon d'Or were especially noticeable. (Silver Flora Medal.)

Messrs. Stuart Low and Co., Bush Hill Park, Middlesex, showed Acacia pendula; the charming white Hydrangea Madame Moullière, and a small blue one named Radiant. A few Carnations and Roses completed the group. (Silver Banksian Medal.)

Messrs. H. Cannell and Sons, Swanley, Kent, showed a large and effective group of zonal-leaved Pelargoniums; the varieties New York, Dublin, Sir T. Hanbury, Arabic, Mentmore, Lady Folkestone and Paris were very noticeable. (Silver Banksian Medal.)

Messrs. James Veitch and Sons, Ltd., Chelsea, showed a group of Cyclamen in a wide range of colours. Most noticeable was Veitch's Giant White Cyclamen and Giant Dark Crimson. (Silver Banksian Medal.)

Messrs. G. Paul and Son, The Old Nurseries, Cheshunt, showed a collection of Lilacs in pots. The best varieties were Marie Legraye (white), Souvenir de L. Späth (lilac), and Madame Lemoine (double white). (Silver Banksian Medal.)

Messrs. Wm. Cutbush and Son, Highgate, N., exhibited flowering shrubs and hardy plants in great variety; also a small collection of Carnations, including the varieties Mrs. Wilfred Gott, White City, and R. F. Felton. (Silver Flora Medal.)

Messrs. H. B. May and Sons, Upper Edmonton, staged a collection of choice Ferns and well-grown plants of Clematis. Of the Clematis, Lucie Lemoine (double white), Lord Wolseley, and Nellie Moser were the choicer varieties. (Silver Banksian Medal.)

Mr. L. R. Russell, Richmond, Surrey, exhibited a mixed collection of flowering and evergreen shrubs bordered by a selection of Alpines in pans. Sedum monstrosum and a fine pan of Aubrietia Dr. Mules were especially interesting.

Mr. James Douglas, Edenside, Great Bookham, Surrey, showed a small but very choice group of Auriculas with a few Primula viscosa hybrids. Old Rose, Roxburgh, Admiration, Ulswater, Harrison Weir, and Lady Veitch were among the most pleasing Auriculas.

Mr. H. Burnett, Guernsey, exhibited an excellent group of Perpetual-flowering Carnations remarkable for their size and fine form. Amongst the best varieties were Mrs. C. F. Raphael, Marmion, Carola, White Wonder and R. F. Felton. (Silver Flora Medal.)

Messrs. Allwood Bros., Hayward's Heath, Sussex, showed a small group of Carnations in the centre of which was an effective stand of their variety Mary Allwood. Wivelsfield Wonder was also well shown

Messrs. W. Wells, Ltd., Merstham, Surrey, staged a collection of Carnations, among which were noted Northport, R. F. Felton, and Salmon Enchantress.

Messrs. R. Gill and Sons, Falmouth, showed a large collection of cut Rhododendrons and plants of Primula Winteri. (Bronze Flora Medal.)

Messrs. Wills and Segar, Onslow Crescent, South Kensington, exhibited a small, effective group of Gerbera Jamesonii hybrids. The centre of the group was occupied by a fine stand of Richardia Pentlandii. Several plants of the curious Nidularium fulgens were also shown by this firm.

The most striking exhibit of hardy plants was that arranged in the form of an extensive rock garden by the Honble. Vicary Gibbs (gr. Mr. H. Beckett), Aldenham House, Elstree. Conifers, flowering shrubs, and a large collection of Alpines were displayed to the best advantage. The centre of the exhibit was occupied by a recess planted with Primula frondosa. Down one side trickled a small stream, which tumbled over Ferns planted in the rock wall into a small pool below. (Gold Medal.)

Mr. Maurice Prichard, Christchurch, Hants, staged an excellent rockwork exhibit planted with a large variety of choice Alpines, amongst which were noted Aubrietias, including the new variety Lilac Queen; Viburnum Carlesii, Androsace pyrenaicum, and hybrids of Saxifraga decipiens. (Silver Flora Medal.)

Messrs. Geo. Jackman and Son, Woking, Surrey, showed an interesting collection of hardy plants backed by Mespilus canadensis, Spiraea arguta and other shrubs. (Bronze Flora Medal.)

Mr. Clarence Elliott, Six Hills Nursery, Stevenage, arranged a very effective rockery on which were bold groups of Saxifraga Boydii, Anemone pulsatilla, Aethionema iberideum, Morisia hypogaea, Viola gracilis, and other Alpines. (Bronze Flora Medal.)

Messrs. Bakers, Codsall, Wolverhampton, staged an interesting collection of hardy plants including varieties of Iris olbiensis, I. pumila, Incarvillea grandiflora, Trillium grandiflorum, and Ranunculus amplexicaule. (Bronze Flora Medal.)

Messrs. J. Piper and Sons, Barnes, Surrey, exhibited a collection of Alpines suitably arranged on rockwork. Some charming hybrids of Primula viscosa were noticed in this group, and also Viola gracilis aureum. (Silver Banksian Medal.)

Messrs. Barr and Sons, 11, King Street, Covent Garden, contributed a small rock garden furnished with a choice selection of Alpines and dwarf bulbous plants, including Narcissus triandrus albus and N. moschatus. Plants of Fritillaria imperialis made an effective background.

The Wargrave Plant Farm, Twyford, Berkshire, arranged a rock garden of considerable size planted with many choice Alpines. A specimen of Iris Susiana in flower attracted much attention.

Mr. Reginald Prichard, West Moors, Dorsetshire, exhibited a small collection of choice Alpines, most noticeable amongst which were Campanula Stevensii nana, Douglasia laevigata, and Primula rosea.

Messrs. G. and A. Clark, Dover, arranged an effective group on the ground consisting of beds of Polyanthus set in turf. The exhibit was backed by a rockery wall planted with Aubrietia Violet Queen, Erica carnea and other subjects. A few conifers above the rock work completed the group. (Silver Flora Medal.)

Messrs. Ware, Feltham, Middlesex, staged a small rock garden furnished with bold groups of Primula rosea, P. denticulata alba, Gentiana acaulis, and Anemone blanda Ingramii.

Mr. G. Reuthe, Keston, Kent, had a collection of rare and choice Alpines in pots, backed with flowering shrubs. A fine form of Primula Juliae was shown in this group.

The Guildford Hardy Plant Nursery, Millmead, Guildford, displayed a miscellaneous collection of Alpines in pots, backed by a few shrubs.

Mr. H. Hemsley, Crawley, exhibited a selection of Alpines against a background of dwarf shrubs. (Bronze Flora Medal.)

Mr. James Box, Lindfield Nurseries, Hayward's Heath, Sussex, arranged a very effective rock garden in a corner position. Flowering shrubs, Bamboos, and Palms formed the background. (Silver Banksian Medal.)

Messrs. Reamsbottom and Co., Geashill, King's Co., Ireland, staged St. Brigid Anemones in great variety.

C. Percival Maw, Esq., Benthall, Kenley, Surrey, exhibited Chionodoxa Luciliae alba, which was much admired.

Exhibits of rock gardens were also shown by the Misses Hopkins, Shepperton; Messrs. John Peed and Son, West Norwood; and Messrs. Whitelegg and Page, Chislehurst, Kent.

Miss Dixon, Elmcroft Nurseries, Edenbridge, Kent, showed Carnations, Polyanthus, and Violets in variety.

Messrs. Barrie and Brown, 39, King William

Street, London, staged boxes of lawn grass, together with a few Hyacinths and Alpines.

Awards of Merit.

Carnation Mrs. Wilfrid Gott.—A white, perpetual-flowering, "Malmaison" variety. The flowers are large and richly scented. The influence of the Malmaison blood is marked in the broader, greyer, recurving foliage, and in the short, stout calyx, as well as in the size of flower and scent, but the plants carried three blooms each, had good stems, and showed other indications of the perpetual flowering habit. (Shown by Messrs. W. H. Cutbush and Son.)

Douglasia laevigata.—A dense-growing, tufted little Alpine with bright, purplish-rose flowers, from the Oregon Mountains, North America. The leaves are very small (¼ inch or less), glossy green, oblong-lanceolate, produced in dense rosettes. The flowers, in simple umbels of from three to seven, are about ⅜ inch in diameter, and marked by a small red eye which closes the tube. They only rise just above the foliage, and scarcely exceed 2 inches in height. Except for the slightly longer tube (which just exceeds the calyx) and for the fewer seeds, Douglasia is scarcely differentiated from Androsace, and the plant under notice closely resembles the Alpine pink Androsaces. The plant is a good grower, and the exhibitor informed us that it does well in peaty-loam, as if it were a moorland plant. It is an interesting commentary on the changed taste of to-day to note that the plant was exhibited by Kew in 1888 and awarded a Botanical Certificate. (Shown by Mr. Reg. Prichard.)

Primula viscosa "Othello."—A hybrid with deep magenta-purple flowers and a small, scarcely noticeable, white eye, of the size of the typical P. viscosa. The *Repertoire de Couleurs* lacks any colour so deep and rich as this. The habit of the plant is vigorous, and the specimen shown carried three trusses, one of them a fasciated stem carrying over fifty flowers.

Primula viscosa "Jean Douglas."—A hybrid, apparently between P. viscosa and an Auricula, with bright, purplish-rose flowers. The plant shown carried three trusses, the best with more than 20 flowers and the smallest with 12. Each flower was over an inch in diameter, and possessed a small, white eye. This is finer than any variety of P. viscosa in cultivation. It was said to be identical with a variety raised some years ago and distributed by Miss Willmott under the name of Mrs. Berkeley, but Mr. J. Douglas, who showed both this variety and Othello, informs us that the plants now certificated were raised by himself from seed at Great Bookham.

Other Novelties.

A bright crimson, mossy Saxifrage named Saxifraga decipiens bristoleana was shown by Mr. T. Kitley, Bath. The plant was scarcely at its best flowering, but was of such promise that the Committee expressed a wish to see it again. The Committee also desired to have submitted on another occasion Rose Erna Teschendorf, a dwarf polyantha variety, with bright crimson flowers, shown by Mr. G. Prince. A lovely box of pure white seedlings of Chionodoxa, some of them seven-flowered, was submitted by C. Percival Maw, Esq., Benthall, Kenley. The variety is very scarce, but Messrs. Barr received an R.H.S. award for the plant in 1897. A pretty Alpine, white-flowered species of Helichrysum (H. bellidioides) was shown by Mr. H. Hemsley, Crawley, who finds it to be quite hardy with him. Androsace Halleri, shown by Miss Ellen Willmott, Great Warley, is a very pretty rose-flowered species.

Orchid Committee.

Present: Sir Harry J. Veitch in the Chair, Messrs. Jas. O'Brien (hon. sec.), Gurney Wilson, R. A. Rolfe, J. S. Moss, J. Wilson Potter, F. Sander, A. McBean, W. Waters Butler, F. M. Ogilvie, W. Cobb, J. Charlesworth, J. Cypher, W. H. Hatcher, H. G. Alexander, W. P. Bound, A. Dye, W. H. White, C. J. Lucas, S. W. Flory, F. Peeters, W. Bolton, F. J. Hanbury, de B. Crawshay and A. Peeters.

Messrs. Armstrong & Brown, Orchidsburst, Tunbridge Wells, were awarded a Silver Flora Medal for an interesting group in which were a number of unnamed Lælio-Cattleyas, one section having pretty flowers of the L. C. Myra class, with yellow sepals and petals and brightly coloured labellums. In the larger-flowered section a pretty cross between L. C. Doris and Cattleya Schroderæ had showy flowers of Apricot yellow tint with crimson lip, and a fine dark form of L. C. Dominiana Orchidhurst variety was exceptionally bright. Others noted were Zygopetalum Armstrongiæ with a bright violet-coloured lip, shading to rose, several good Brasso-Cattleyas and Brasso-Lælias; the greenish-yellow Cypripedium Rossettii; spotted forms of Odontoglossum crispum, and a plant of the curiously-marked O. c. Kinlesideanum; some attractive hybrid Odontoglossums and yellow hybrid Dendrobiums.

Messrs. Sander & Sons, St. Albans, were awarded a Silver Flora Medal for a group in which the best forms of Cattleya Schroderæ were well represented, together with a selection of Brasso-Cattleyas. Among the Odontoglossums were several very finely blotched seedling forms of Odontoglossum crispum, and some showy hybrids. Many scarlet Renanthera Imschootiana gave bright colour, and others noted were Odontonia St. Alban, a very prettily-marked flower; some bright scarlet Odontiodas, Scuticaria Steelii, Pholidota ventricosa, Vanda cœrulescens, and among Cypripediums a pretty new hybrid between C. glaucophyllum and C. Niobe Westonbirt Variety with distinctly marked dorsal sepal. A very interesting plant in this group was a new dark-coloured form of Cymbidium I'Ansoni received from Annam.

H. T. Pitt, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), secured a Silver Flora Medal for a good group in which were some blotched forms of Odontoglossum crispum raised from seed, and some interesting crosses raised at Rosslyn, including several hybrids of O. Edwardii. Among the Cattleyas were a well-marked form of C. Trianæ near to Backhousiana, and others noted were Cirrhopetalum Mastersianum, C. appendiculatum, Chondrorhyncha Chestertonii, Epidendrum Wallisii, several good forms of Miltonia vexillaria, Zygopetalum Perrenoudii and various Lælio-Cattleyas.

H. S. Goodson, Esq., Fairlawn, Putney (gr. Mr. G. E. Day), was awarded a Silver Banksian Medal for an effective group in which were a remarkable selection of Odontiodas, including O. heatonensis, two forms of O. Vuylstekeæ, O. Patricia, O. Bradshawiæ, O. Cooksoniæ, and other bright scarlet varieties. The Odontoglossums included O. ardentissimum Dayanum, large and richly-blotched; O. Vuylstekei magnificum, a good dark flower, and O. Fairlawn (Edwardii × Wilckeanum), dark purple tipped with rose.

Mr. Sidney Flory, Tracy's Nursery, Twickenham, received a Silver Banksian Medal for an effective group of specially fine forms of Cattleya Schroderæ, and various pretty hybrids with which were noted good Trichopilia suavis, some excellent forms of Lycaste Skinneri, good Odontoglossums, including O. crispum roseum, and among rare species the singular Pleurothallis hemirhoda, P. Grobyi, P. tridentata, Restrepia elegans, an unknown cream-white Megaclinium, Saccolabium ampullaceum and Bulbophyllum pavimentatum.

Messrs. Stuart Low & Co., Bush Hill Park, were awarded a Silver Banksian Medal for a good group, at each end of which were fine specimens of their best form of Dendrobium Wardianum, together with showy Cattleya Schroderæ, and one pure white form; C. intermedia alba and other Cattleyas, Brasso-Cattleyas, Dendrobium aureum, D. Chessingtonense and other Dendrobiums and Oncidium concolor.

Messrs. Hassall & Co., Southgate, were awarded a Bronze Banksian Medal for a small group of well-grown Orchids, which included two plants of the white Cattleya Luddemanniana Stanleyi, several good C. Schroderæ and C. Mendelii, Brasso-Cattleya Digbyano-Mendelii, a good dark-coloured Lælio-Cattleya Gottoiana and Lycaste Tunstillii.

Messrs. J. & A. McBean, Cooksbridge, staged an effective group which contained a very fine form of Odontioda Lambeauiana, and a large and bright scarlet form of O. Keighleyensis, some superbly-grown Cattleya Schroderæ, one having a pseudo-bulb six inches in circumference; Odontoglossum coronarium, some specially finely-blotched forms of Odontoglossum crispum, the new white Cattleya Brenda variety, Antigone, and other showy hybrids, including Lælio Cattleya Ganymede var. Hermes and Miltonia Bleuana McBean's variety.

Messrs. Jas. Veitch & Sons, Chelsea, showed Lælio-Cattleya Frederick Boyle Langley variety, a pretty blush-white flower; and Brasso-Lælio Cattleya Medina, a well-formed flower.

W. Waters Butler, Esq., Southfield, Birmingham, sent the very handsome Cattleya Tityus Southfield variety, and Lælio-Cattleya Dominiana Southfield variety.

Col. J. Rutherford, Beardwood, Blackburn (gr. Mr. Lupton), showed a fine plant of the rare Cymbidium Parishii.

E. H. Davidson, Esq., Orchid Dene, Twyford, sent Cattleya Schroderæ Davidson's variety, a large flower of perfect shape, white, tinted with Peach blossom colour.

J. S. Moss, Esq., Wintershill Hall, Bishop's Waltham (gr. Mr. Kench), showed Odontioda Bradshawiæ ardens, a bright scarlet flower.

Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. Collier), showed the yellow Lissochilus speciosus and Odontioda Bradshawiæ marginata.

Pantia Ralli, Esq., Ashtead (Orchid grower, Mr. Farnes), sent a finely-grown specimen of Odontioda Charlesworthii and O. Cooksoniæ Ralli's variety.

De B. Crawshay, Esq., Rosefield, Sevenoaks (gr. Mr. Stables), sent Odontoglossum Dirce (harvengtense × ardentissimum), a pretty flower richly blotched with dark purple.

C. J. Phillips, Esq., The Glebe, Sevenoaks, sent Odontioda Royal Gem (O. Vuylstekeæ × O. ardentissimum), of fine shape, cream-white, slightly tinged with pink, and evenly spotted with light red; and Odontoglossum Valeria Glebe variety (Edwardii × Vuylstekei), dark claret-coloured with pale-rose tips.

F Menteith Ogilvie, Esq., The Shrubbery, Oxford (gr. Mr. Balmforth), showed the handsome Odontoglossum Ossulstonii Shrubbery variety, which obtained a First-class Certificate in 1911.

AWARDS.

First-Class Certificates.

Brasso-Cattleya heatonensis "Canary" (*B. Digbyana* × *C. Hardyana*), from Lieut.-Col. Sir Geo. L. Holford, K.C.V.O., Westonbirt (gr. Mr. H. G. Alexander). One of the largest and most perfect in shape of any of the Brasso-Cattleyas, and quite distinct in colour, which is clear canary-yellow, with a faint lilac shade, the large cream-coloured fringed lip having pink markings in front of the yellow disc.

Cypripedium Roundhead (*nitens* × *Earl of Tankerville*), from Lieut.-Col. Sir Geo. L. Holford, K.C.V.O. A model flower of very fine shape and substance. The dorsal sepal is white above and gamboge-yellow on the lower half, all but the margin bearing blackish chocolate blotches. The broad lip and petals yellow tinged with mahogany red.

Laelio-Cattleya Dominiana, Southfield variety (*L. purpurata* × *C. Dowiana*), from W. Waters Butler, Esq., Southfield, Birmingham. A noble flower with broad sepals and petals, rose colour with a pale yellow tinge, and an intensely dark mulberry claret lip.

Cymbidium Humblotii, from Messrs. Charlesworth & Co., Haywards Heath. A noble, large-growing species from Madagascar, of trailing habit, the foliage gracefully arranged. The flowers are numerous, on very stout inflorescence about 2 inches across, pale green with black markings on the lip around the yellow crest. In general appearance the flower has a resemblance to Cœlogyne pandurata.

Odontoglossum eximium, Warnham Court variety (*ardentissimum* × *crispum Luciani*), from C. J. Lucas, Esq., Warnham Court, Horsham (gr. Mr. Duncan). A very fine broad-petalled flower, white, very heavily blotched, with reddish-purple.

Awards of Merit.

Odontioda Cooksoniae, Ralli's variety (*O. ardentissimum* × *C. Noezliana*), from Pantia Ralli, Esq., Ashtead Park. The plant shown had a strong spike of eighteen very fine bright-red flowers of good shape, with blush-white front to the lip.

Odontioda Keighleyensis ignifera (*O. cirrhosum* × *C. Noezliana*), from Messrs. J. & A. McBean. A fine variety with brilliant scarlet flowers, larger than those of the original form.

Cattleya intertexta Juliettae (*Mossiae alba* × *Warneri alba*), from Monsieur Firmin Lambeau, Brussels. A very fine pure white variety, with

broad crimped petals and lip, the centre of the lip having chrome-yellow markings.

Cultural Commendation.

To Messrs. Charlesworth & Co., for a fine specimen of Cymbidium Humblotii, bearing a very stout spike 5 feet long, and having six branches, the whole bearing 110 flowers. The plant has been long in bloom, and originally bore 132 flowers and buds.

Narcissus Committee.

Present: J. T. Bennett-Poë, Esq. (in the chair), Miss Ellen Willmott, Messrs. W. Poupart, W. F. M. Copeland, C. Dawson, W. A. Milner, Henry Backhouse, R. W. Wallace, E. M. Crosfield, P. D. Williams, F. Herbert Chapman, P. Rudolph Barr, H. A. Denison, G. Reuthe, H. V. Warrender, W. Goldring, J. D. Pearson, Joseph Jacob, G. W. Leake, F. Barchard, Herbert Smith, Arthur R. Goodwin, W. B. Cranfield, Alex. M. Wilson, W. A. Watts, Christopher Bourne, and Charles H. Curtis (hon. sec.).

Messrs. Barr & Sons, King Street, Covent Garden, showed one of the richest collections of Daffodils. Cornelia, Cleopatra and Lord Roberts are good yellow Trumpet varieties, whilst Atlanta, Mrs. R. Sydenham, Noblesse, and Mrs. George H. Barr are fine white Trumpet sorts. Sunrise has a most beautifully shaded orange cup. Crœsus, Charm and Jasper were also shown finely. Among the numerous flowers of the Poeticus type we noticed Horace, Cassandra and Dante. A small group of forced Darwin Tulips was also shown by this firm. (Silver-gilt Flora Medal.)

Messrs. R. H. Bath, Ltd., Floral Farms, Wisbech, arranged an interesting collection of Daffodils of standard types. Southern Star, Homespun, Seagull, White Queen and King Alfred were noticeably good. A few of the Poetaz hybrids, such as Klondyke and Jaune à Merveille, were also included. A few Darwin Tulips were shown by Messrs. Bath, including Rev. H. Ewbank, Wm. Copeland and Pride of Haarlem. (Silver Banksian Medal.)

Mr. W. A. Watts, St. Asaph, N. Wales, made an effective display with large masses of Firebrand, Lucifer and Dubloon. There were also fine flowers of the yellow trumpet Hirlas, and the orange-cupped and sulphur-perianthed Torchlight (Barrii). (Silver Banksian Medal.)

Mr. Christopher Bourne, Simpson, Bletchley, staged one of the most interesting groups notable for the quality of the flowers. Red Lady is a fine Barrii variety, with broad, white perianth and red chalice. Queen of Hearts has more sulphur in the perianth, and Cœur de Lion is another good variety, with orange-coloured eye and sulphur perianth. Scarlet Gem is a new Poetaz of rich colours. Among the better known sorts we noted King Alfred, Apricot, Great Warley and the Giant Leedsii White Countess. (Silver-gilt Banksian Medal.)

Miss V. Warren, Westbere, Canterbury, showed some of the best seedlings raised by the late Rev. G. P. Haydon. They were noticeable for their richness in giant Trumpets, including the varieties Euphonium, Secretary, Lyon and Pluckley.

Mrs. R. Ormston Backhouse, Sutton Court, near Hereford, also showed seedling Trumpet varieties, some interesting forms of Leedsii, and a large-cupped variety with something of the colouring of apricot. The varieties were not named.

The Rev. G. H. Engleheart, Dinton, Salisbury, staged some particularly beautiful seedlings, which formed one of the most interesting collections in the hall. The group was marked "Not for competition," and the varieties were under number only, so that we cannot profitably give any details of them.

Messrs. Cartwright & Goodwin, Ltd., Kidderminster, arranged an effective group of first-class varieties. Empire, the finest giant Leedsii, challenged comparison with the new White Emperor. John of Gaunt is an immense yellow Trumpet variety; Goldseeker is smaller, but is of the most intense yellow. The pendulous Cælia is pretty, and Chaffinch, Chough, Ambrosine and Canopus were others noted among the choicest flowers shown. (Silver Flora Medal.)

Mr. Herbert Chapman, Rye, Sussex, staged many fine novelties, the most striking perhaps being the giant yellow Trumpet Impresario. The Poeticus variety Ibis had particularly large pure white segments. The lemon perianth and scarlet eye of Sentry commanded attention, whilst Torch, Maid of Honour, Monarch and Lady Mayoress were worthy of note. (Silver Flora Medal.)

Mr. A. M. Wilson, Shovell, Bridgwater, showed a collection of Narcissi that was unrivalled for quality and not seriously challenged in novelty. We regret that so many of the best seedlings are still under number only, but among those named we may direct attention to Soval, with broad, creamy-perianth segments and small red eye; Berseker, a giant yellow Trumpet; Jupiter, with sulphur perianth and flat, deep orange crown; Sardius, somewhat similar, but with white perianth; Princess, a pale yellow Trumpet; Œnone, Crœsus and Jupiter. (Silver-gilt Flora Medal.)

Messrs. Sutton & Sons, Reading, exhibited four varieties, in masses sufficiently large to show their value for decorative purposes. They were Orange Buffer, Southern Gem, Southern Star, and Homespun.

The Lissadell Bulb Farms, Sligo, staged several interesting unnamed seedlings and such standard varieties as Mme. de Graaff, Ariadne, Bennett-Poë, Acme and Muriel. (Bronze Flora Medal.)

Robert Sydenham, Ltd., Tenby Street, Birmingham, showed some interesting and pretty Daffodils. We noted particularly Lilian Sydenham, with cream perianth and flat orange chalice, Gold Coin, Cygnet, Cyril Price, Dorothy Kingsmill, Lord Muncaster, and Laureate. (Silver Banksian Medal.)

The Wargrave Plant Farm, Ltd., Liverpool Street, London, staged a few Darwin Tulips and commoner forms of Narcissus.

Messrs. R. & G. Cuthbert, Southgate, arranged a good collection of early single Tulips. They were finely grown, as well as more in season than the Darwins shown elsewhere, which suffered too much from weak stems through forcing. The finest earlies were shown, including Pink Beauty, Le Rêve, Thomas Moore, Prince of Austria, Couleur Cardinal, Miss Roosevelt, Golden Queen, and many others. The colours were attractively contrasted. (Silver-gilt Banksian Medal.)

Award of Merit.

Narcissus White Emperor.—A fine, creamy white Trumpet Daffodil, with broad, overlapping perianth segments and straight, smooth trumpet, spreading and recurving at the mouth. The proportions of the flower place it on the borderline between the Leedsii and Ajax varieties, and in order to classify it it was found necessary to appoint a sub-committee of three to decide into which group it should be placed. But after careful measurement the sub-committee failed to agree, although the general opinion was strongly in favour of placing it with the Trumpets. It may be compared with Empire, which is admittedly a Leedsii form. The trumpet of White Emperor is of a purer colour, slightly longer, distinctly more cylindrical, and more folded back at the mouth. Both flowers are about three inches in diameter. It was raised by the Rev. G. H. Engleheart, and shown by Messrs. Cartwright and Goodwin and Mr. C. Bourne.

Fruit and Vegetable Committee.

Present: Messrs. J. Cheal (in the chair), A. Bullock, E. Beckett, W. E. Humphreys, H. Markham, J. G. Weston, J. Davis, J. Jaques, W. Crump, H. S. Rivers, and C. G. A. Nix.

The only subjects brought to the notice of the committee were two seedling Apples, which the members did not consider superior to varieties already in cultivation.

EDINBURGH BOTANICAL.

March 13.—The fifth meeting for the session was held on this date, Sir Archibald Buchan-Hepburn, Bart., President, in the chair.

A paper on "The Primulas of the Sinensis Section" was read on behalf of Professor Bayley Balfour. The first part of the paper dealt with the increase of the number of known species of the genus, chiefly due to exploration in Western China. The number of species in the Sinensis Section is now at least 46, of which 16 are in cultivation, P. sinensis, P. mollis and P. Sieboldii being the best known.

Mr. George Bryce read a paper on "The Wild-Rubber Country of Madagascar," which was illustrated by lantern views of the restricted area where one of the species of Landolphia abounds. The vines, owing to the geological formation, are slender, and the yield scarcely repays the labour expended.

Mr. E. Holmes Smith read a paper on the Growth and Preparation of Flax Fibre in Belgium, illustrated with lantern slides.

Dr. R. S. MacDougall showed specimens of the fruits of Red Currant infected with the American Gooseberry Mildew, Sphaerotheca mors-uvæ.

Mr. R. C. Davie gave an account of Stratiotes aloides, L., the Water Soldier, in a small loch near Crieff, where it was planted in 1861.

Among the exhibits was a specimen of Viscum album, Linn., growing on Abies pectinata, D.C., shown by Mr. W. Balfour Gourlay.

Among the living plants shown from the Royal Botanic Garden were the following:—Androsace Delavayi, Franch., a species with pinkish or white flowers, smelling of Hawthorn, from Yunnan. Cheiranthus asper, Cham. et Schlecht. (= Erysimum capitatum, Greene), a half-hardy species with creamy-white flowers. Not often seen in cultivation nowadays. Pittosporum rigidum, Hook, f., a hardy New Zealand species. Ariopsis peltata, Nimmo., Himalaya. Osmanthus Delavayi, Baill., Yunnan. Ribes laurifolia, Jancz., an evergreen with numerous racemes of greenish flowers (introduced by Mr. E. H. Wilson from China). Ribes viburnifolia, A. Gray., a compact bushy plant from California; flowers reddish-brown.

THE WEATHER.

GENERAL REMARKS.

April 1, 1913.

Weather varied a good deal, but during the greater part of the period it was of an unsettled description, although some days were fair and dry. As a rule, the western section of the Kingdom was fairer than the eastern. Thunder and lightning occurred at some stations in the east and south-east of England on the 28th and 29th.

Temperature differed little from the average. The highest readings were recorded on rather irregular dates; at a great number of stations they occurred on the 29th. The actual values ranged from 58° in Ireland S. to 54° in England N.E. The lowest of the minima, which were observed during the earlier half of the period, varied from 24° in Scotland E. and England E. to 32° in Scotland N., and to 37° in the English Channel. The lowest grass readings were 17° at West Linton, 18° at Birmingham, Hampstead, and Blackpool, and 19° at Dublin.

Mean Temperature of the Sea.—The water was colder than during the corresponding week of last year, except on the south-west coast of Ireland, but on several parts of the coast its temperature was equal to or above the normal. The mean for the week ranged from 50° at Seafield and 48° at Scilly and Newquay to 39° at Burnmouth.

Rainfall was above the average in all the eastern districts, and in England S.W., below it elsewhere. In Scotland N. and W., and in Ireland N., the deficit was large. At Salcombe, on the 29th, the fall amounted to as much as 1.1 in.

Bright Sunshine exceeded the normal in Ireland and the western districts of England, as well as in Scotland N., but was less in other parts of the Kingdom. The mean daily duration ranged from 6.2 hours (50 per cent. of the possible duration) in the English Channel district, and more than five hours in Ireland and in England S.W. to 2½ hours in England E., and to only 2.3 hours (18 per cent. of the possible) in England N.E.

THE WEATHER IN WEST HERTS.

Week ending April 2, 1913.

Another wet week, and the third in succession.—This week, like the previous one, proved on the whole rather warm. On the coldest night the exposed thermometer registered 11° of frost. The ground is still at about a seasonable temperature, both at 1 foot and 2 feet deep. Rain fell on all but one day, and to the total depth of three-quarters of an inch. During the last three weeks there have been only three days without rain—the total measurement being 2¼ inches, which is in excess of the average for the whole of March. During that period 6 gallons of rainwater has come through both the bare soil percolation gauge, and also through that on which short grass is growing. This was a dull week. In fact, the sun shone on an average for only 1¾ hours a day, which is less than half the average duration for the time of year. The winds were very variable in strength. In the windiest hour of the one windy day the mean velocity reached thirteen miles—direction S.S.E. The average amount of moisture in the air at three p.m. exceeded a seasonable quantity for that hour by 7 per cent. A selected tree of the Blackthorn first came into flower on March 30, which is a fortnight earlier than its average date for the previous twenty-two years, and six days earlier than last year. This is the earliest date

of flowering for this Blackthorn since 1903, or for ten years.

MARCH.

Warm, wet, sunless, and very windy.—This was a warm March, both during the daytime and at night. On the warmest day the temperature in the thermometer screen rose to 56°, which is very low for the extreme maximum reading for the month. On the coldest night the exposed thermometer registered 17° of frost—about the average extreme minimum for March. Rain fell on twenty-two days, this being, with three exceptions, the greatest number of rainy days in March that I have yet recorded here. The total rainfall amounted to 2¼ inches, which is a quarter of an inch in excess of the average It should, however, be mentioned that on the first ten days there was very little rain. Some snow fell on three days, but the flakes on each occasion melted on reaching the ground. The sun shone on an average for 3½ hours a day—which is twenty minutes a day short of the average duration for the month. The winds were, as a rule, unusually high—making this the windiest March for ten years. In the windiest hour the mean velocity reached twenty-four miles—direction W.S.W. We have to go back sixteen years in order to find a March with as high a wind as this. For only sixty-seven hours altogether was the direction of the wind any point between north and east The average duration for these north-easterly winds in March is 203 hours. There was about a seasonable amount of moisture in the air at three o'clock in the afternoon.

OUR UNDERGROUND WATER SUPPLY.

With March came to an end the winter half of the present drainage year. During those six months the total rainfall amounted to 15⅝ inches, which is three-quarters of an inch in excess of the average for the same six months in the previous fifty-seven years. This is equivalent to an excess of the average of 15,160 gallons of rain on each acre in this district. At the same time last year there was an excess of 161,070 gallons per acre. *E. M., Berkhamsted, April 2, 1913.*

Obituary.

Andrew Kingsmill.—We regret to announce the death of Mr. Andrew Kingsmill, which took place at his residence, The Holt, Harrow Weald, on Saturday, March 29, at the age of 71 years. After an active life in commercial circles as an official at the Bank of England, and later for 24 years manager of the London branch of the British Linen Company's bank, Mr. Kingsmill retired some years ago. He continued the pursuit of hardy plant gardening, which had been his main recreation during life, and his beautiful garden at The Holt became famous, experts from all parts of the country being attracted by the fine displays of Narcissus and other flowers in the spring-time. Mr. Kingsmill was one of the directors of the Royal International Exhibition, 1912, a member of the Narcissus Committee of the Royal Horticultural Society, and of the Horticultural Club.

Moody.—Much regret will be felt among horticulturists at the death of Mr. Moody, of Lonsdale, Horsham, at the comparatively early age of 69. Mr. Moody was for 28 years gardener at South Lodge, Lower Beeding, the residence of F. du Cane Godman, Esq. He retired a few years ago to Horsham, and applied his knowledge and skill to the development and beautifying of his own garden, which was said to be the finest in the district.

J. Pierpont Morgan.—The death of Mr. Pierpont Morgan, LL.D., which occurred on the 31st ult., at Rome, not only removes one of the world's greatest financiers, but also a very liberal patron of horticulture, both in this country and America. Dover House, Roehampton, belonged to Mr. Morgan's father, who lived for the greater part of his time in London, and appointed his son, Mr. J. Pierpont Morgan, manager of the American branch in 1860. Mr. Morgan took over Dover House in 1890, on the death of his father, and from that time he maintained the gardens in the highest state of perfection, and extended them in many directions; notwithstanding the fact that all the pleasure he obtained personally from the gardens themselves was got each year during a short visit to London in the spring. His delight was in the knowledge that the produce from the gardens was distributed amongst his friends in England. Until the receipt of grave news from Rome, his agent and gardener, Mr. J. F. McLeod, was looking forward to Mr. Morgan's annual visit to London, which would have taken place during the present month save for the fatal illness. Deceased is succeeded by his only son, Mr. J. Pierpont Morgan, a Fellow of the Royal Horticultural Society, whose country residence is at Wall Hall, Hertfordshire.

MARKETS.

COVENT GARDEN, April 2.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general averages for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—Eds.]

Cut Flowers, &c.: Average Wholesale Prices.

	s.d.	s.d.
Arum (Richardias)	4 0	—
Azalea, per dozen bunches ...	4 0	—
Camellias, white, per dozen ...	2 0	—
Carnations, per dozen blooms, best American varieties ...	1 0	1 6
— smaller, per doz. bunches...	12 0	15 0
— Carola (crimson), extra large	2 0	3 0
— Malmaison, p. doz. blooms:		
— — pink ...	12 0	15 0
Daffodils, per doz. bunches:		
— Emperor ...	2 0	2 6
— Sir Watkin ...	1 6	2 0
— Victoria ...	2 0	—
Eucharis, per doz.	3 0	4 0
Freesia, white, per doz. bunches...	1 6	2 0
Gardenias, per box of 15 and 18 blooms... ...	3 0	4 0
Lilium auratum, per bunch ...	2 0	2 6
— longiflorum, per doz., long	4 0	5 0
— — short ...	4 0	—
— lancifolium alba, long ...	2 0	—
— — short ...	2 0	—
— — speciosum		
— rubrum, per doz., long ...	2 0	—
Lilium speciosum rubrum, short	1 0	1 3
Lily of the Valley, per dozen bunches:		
— extra special..	18 0	—
— special... ...	12 0	15 0
— ordinary ...	10 0	—
Orchids. Cattleya, per doz. ...	10 0	—
— Cypripedium	3 0	—
— Odontoglossum crispum ...	4 0	—
Pelargoniums, p. dz. bunches, Double Scarlet	8 0	—
Roses, 12 blooms:		
— Countess Derby	—	—
— Liberty ...	2 0	3 0
— Niphetos ...	1 6	2 0
— Richmond ...	2 0	3 0
— Rose Queen ...	3 0	4 0
— Sunburst ...	3 0	5 0
— Ward	2 0	3 0
— Mermets ...	2 0	3 0
Spiræa (Astilbe) japonica, per dz. bunches ...	8 0	—
Tulips, per dozen bunches:		
— double red ...	10 0	12 0
— — pink ...	10 0	12 0
— single red ...	12 0	—
— — white ...	6 0	8 0
— — yellow ...	8 0	9 0
— — bronze ...	9 0	—
— — pink ...	9 0	10 0
Violets. Princess of Wales, per dozen bunches	2 0	4 0
— Anemone fulgens	2 6	3 0

Cut Foliage, &c.: Average Wholesale Prices.

	s.d.	s.d.
Adiantum Fern (Maidenhair), best, per doz. bunches ...	6 0	7 0
Agrostis (Fairy Grass), per doz. bunches ...	2 0	4 0
Asparagus plumosus, long trails, pr. ½doz.	1 6	2 0
— medium, doz. bunches ...	12 0	18 0
— Sprengeri ...	10 0	12 0
Berberis, natural, per doz. bnchs.	3 0	4 6
Carnation foliage, doz. bunches...	3 0	—
Croton foliage, various, dz. bnchs.	12 0	15 0
Cycas leaves, artificial, per doz.	3 0	12 0
Eulalia japonica, per bunch ...	1 0	1 6
Moss, gross bunches	6 0	—
Myrtle. doz. bnchs. (English), small-leaved ...	6 0	—
— French... ...	1 0	—
Smilax, per bunch of 6 trails ...	1 3	1 6

French Flowers: Average Wholesale Prices.

	s.d.	s.d.
Allium, per pad ...	8 0	9 0
Lilac, White, per bunch	3 6	4 0
— mauve ...	5 0	—
Marguerite, yellow, per dozen bunches ...	1 9	2 0
Ranunculus, per doz. bunches:		
— Barbaroux ...	2 0	3 0
— double scarlet	8 0	9 0
Violets, per pad ...	4 0	—
— Parma, large bunches, each	2 0	2 6

Guernsey Flowers: Average Wholesale Prices.

	s.d.	s.d.
Narcissus—doz. bun.:		
— Grand Primo	2 6	3 0
— Emperor ...	1 6	2 0
— Empress ...	1 6	2 0
Narcissus:		
— Horsfeldii ...	1 6	2 0
— Poeticus ...	1 6	2 0

Plants in Pots, &c.: Average Wholesale Prices.

	s.d.	s.d.
Azalea, white and coloured, per dozen pots ...	30 0	36 0
Aralia Sieboldii, dozen	6 0	7 0
Araucaria excelsa, per dozen ...	18 0	21 0
Asparagus plumosus nanus, per dozen	10 0	12 0
— Sprengeri ...	8 0	9 0
Aspidistra, p. dz., green	21 0	30 0
— variegated	30 0	60 0
Boronia megastigma	15 0	18
heterophylla ...	15 0	18
Cinerarias, p. doz.	8 0	9 0
Cocos Weddeliana, per dozen, 60's	6 0	12 0
— larger, each ...	2 6	10 6
Croton, per dozen	18 0	30 0
Cyclamens, 48's ...	10 0	12 0
Cyperus alternifolius, p. doz.	5 0	6 0
— laxus, per doz.	4 0	5 0
Dracæna, green per dozen ...	10 0	12 0
Ferns, in thumbs, per 100... ...	8 0	12 0
— in small and large 60's ...	12 0	20 0
in 48's, per doz.	6 0	
Ferns: choicer sorts per doz.		

Plants in Pots, &c.: Average Wholesale Prices (cont.)

	s.d.	s.d.
Ferns: (*Continued.*)—		
— in 32's per doz.	10 0	18 0
Ficus elastica, per dozen	9 0	12 0
Genistas, per doz.	10 0	12 0
Geonoma gracilis, 60's per dozen	6 0	8 0
— larger, each ...	2 6	7 6
Hyacinths, white, in pots, p. doz.	8 0	9 0
Kentia Belmoreana, per dozen	5 0	42 0
— Fosteriana, 60's, per dozen	4 0	6 0
— — larger, per dozen... ...	18 0	63 0
Latania borbonica, per dozen ...	12 0	30 0
Lilium lancifolium rubrum in pts., per dozen ...	13 0	21 0
Lilium lancifolium alba, in pots, dozen	18 0	21 0
Lilium longiflorum per dozen ..	18 0	30 0
Lily of the Valley	13 0	21 0
Marguerites, in 48's per doz., white	8 0	10 0
Pandanus Veitchii, per dozen ...	36 0	48 0
Pelargonium (Geranium), double scarlet, 48's ...	4 0	5 0
— other varieties	5 0	6 0
Phœnix rupicola, each	2 6	21 0
Spiræa japonica, per dozen pots	6 0	8 0
— pink	10 0	12 0

Potatos.

	per cwt. s.d.	s.d.		per bag. s.d.	s.d.
Bedfords	4 0	4 6	Dutch	2 9	3 6
Kents	4 3	5 0	Belgian	3 6	4 6
Blacklands... ...	3 6	3 9	German	3 9	4 6
Evergoods... ...	3 6	3 9	Dunbars	5 6	6 6
King Edward ...	4 0	5 0	Scotch (grey soil)	4 0	5 0

Remarks.—Trade is fairly good for best tubers only: tubers of second-rate quality are difficult to dispose of. Consignments are sufficient to meet the demand. *Edward J. Newborn, Covent Garden and St. Pancras. April* 2, 1913.

Fruit: Average Wholesale Prices.

	s.d.	s.d.
Apples, English:		
— Cooking, per bushel	4 0	7 0
— French Russets, box	7 0	8 6
— Canadian, brls.	16 0	25 0
— Wenatchee, p. case	7 6	10 6
— American, brls.	13 6	30 0
— Californian Newtowns, pr. case	7 0	8 0
— Nova Scotian, per barrel ...	12 0	18 6
— Oregon, Newtown Pippin, per case ...	9 6	11 0
— Australian and Tasmanian Apples, pr. case	8 0	10 0
— Coxe's Orange Pippin, pr. case	12 6	25 0
Bananas, bunch:		
— Doubles ...	8 6	11 0
— No. 1	7 0	8 0
— Extra	9 0	10 0
— Giant	12 0	14 0
— Loose, p. doz.	0 6	1 6
— Red coloured...	4 6	5 6
— Jamaica, per ton	£9	£12
— Jamaica Ordinary, per box (9 doz.)... ...	5 0	5 6
Dates, per dozen ...	2 9	3 0
— Egyptian, cwt.	25 0	—
Cranberries, p. case	9 0	—
Green Figs ...	18 0	30 0
Grape Fruit, case:		
— 96's		
— 80's		
— 64's	8 0	20 0
— 54's		
— per dozen ...	4 0	6 0
Grapes (English), per lb.:		
— Almeria, barrel	18 0	25 0
Grapes, *continued*—		
Almeria per doz. lbs.	7 6	8 6
— Gros Colman	3 0	4 0
— Belgian, p. lb.	1 9	3 0
— Cape, per box	4 6	8 0
Lemons, Messina, per case ...	11 6	22 0
Lychees, 1 lb. box	1 6	—
Mangoes, Cape, dz.	6 0	8 0
Melons, Cape ...	1 0	2 0
Nuts, Almonds, bag	52 6	—
— Brazils, cwt. ...	54 0	62 0
— Spanish, sack	40 0	42 6
— Barcelona, bag	35 6	36 0
— Cocoanuts, 100	18 0	23 0
— English Cobs, per lb.	0 3	0 4
— Chestnuts, bg.	14 0	26 0
— Walnuts, French, p. cwt.		
— Naples, p. cwt.	64 0	—
Nectarines, Cape, box	12 0	15 0
Oranges:		
— Seville, sours, case	18 0	20 0
— Messina, bitters, case ...	9 0	9 6
— Jaffa, per case	8 6	9 0
— Murcia... ...	8 0	10 0
— Mandarines, p. box	0 9	7 0
— Florida Tangerines, p. case	14 0	16 0
— Denia, per case	12 6	32 0
— Californian, Seedless, case	11 6	13 6
— Palermo Blood	7 6	8 0
Peaches, Cape, box	10 0	15 0
Pears:		
— Cape, box ...	4 6	7 0
Pineapples, St. Michael ...	2 6	4 0
— Cape, dozen ...	4 0	6 0
Plums, Cape, box	5 0	8 0
Rhubarb, doz. bndl.	0 9	1 0
— Natural ...	2 0	—
Strawberries, p. lb.	3 0	8 0

Vegetables: Average Wholesale Prices.

	s.d.	s.d.
Asparagus, Giant, per bundle ...	8 0	10 0
— English, per bundle... ...	2 6	3 0
— Paris green	2 6	3 0
— Sprue, bundle	0 5	0 6
— Dijon	3 3	3 6
— Lauris	3 0	4 0
— Cavaillon ...	1 6	2 0
— Victoria ...	7 0	8 0
Artichokes (Globe), per dozen ...	2 6	3 0
— ground, ½ bus.	1 6	—
Beans:		
— Guernsey, lb.	0 10	1 0
— English, per lb.	0 10	1 0
— French, per lb.	0 10	1 0
— — broad, pad	6 0	6 6
— Madeira, per handle... ...	3 6	4 6
Beetroot, p. bshel.	2 0	2 6
— bags	3 0	3 6
Broccoli, bushel	1 0	1 6
— bags	1 9	2 0
Cabbages, p. tally	3 0	5 0
— per doz. ...	2 0	2 6
Carrots (English), pr. doz. bun....	1 6	2 6
— French, dozen per pad ..	8 6	12 0
Carrots (English) unwashed, per bag	2 0	2 6
Carrots (English) *continued* — washed, bag ...	3 0	—
Cauliflowers, per tally	10 0	15 0
— boxes	4 0	5 0
Celeriac:		
— French, p. doz.	3 0	—
Celery, per dozen "fans" ...	12 0	18 0
Chicory, per lb. ...	0 2	0 2½
Cucumbers, per dozen	3 0	4 0
Endive, per dozen	2 0	—
— French, p. doz.	2 0	3 0
Greens, per bushel	1 0	1 6
— bags	1 6	—
Horseradish, 12 bundles ...	10 0	12 0
Leeks, per doz. ...	1 0	1 6
Lettuce, per doz....	1 6	2 0
— French, per crate	5 6	6 0
— Cabbage Lettuce, per crate	1 9	2 6
Mint, per dozen bunches ...	3 0	6 0
Mushrooms, cultivated, per lb	0 10	1 0
— Broilers ...	0 8	0 10
Mustard and Cress, per doz. baskets	0 10	1 0

Vegetables: Average Wholesale Prices (cont.)

	s.d.	s.d.
Onions (English), per bag	3 0-	4 0
— per bushel	1 6-	2 0
— picklers, per ½ bushel	2 6-	3 0
— (spring), per doz. bunches	2 6-	3 0
(Spanish), case	4 6-	5 6
— Dutch, bags	2 0-	2 6
Peas, French, pad of 10 lb.	4 0-	4 6
— Guernsey, p.lb.	0 10-	1 0
Parsley, per doz. bunches	2 0-	3 0
Parsnips, per bag	1 9-	2 0
— per bushel	1 0-	—
Radishes (French), per dozen	1 0-	1 6
Sage, per dozen	2 0	—
Savoys, per tally	3 6-	6 0
— per box	2 6-	3 0
Seakale, punnets	0 8-	0 10
— outdoor, box, 12 lbs.	4 0	—
Spinach, p. bushel	3 0-	—
— French, crate	3 6-	4 0
Scotch Kale bushl.	1 0-	1 2
Tomatos, English, per lb.	0 10-	1 0
— Canary, p. bdl.	10 0-	16 0
Thyme, per dozen bunches	1 6-	2 0
Turnips (English), per dozen bunches	1 6-	2 6
— bags	3 0	—
— washed, French, dozen	7 0	—
— unwashed, bag	2 6	—
Turnip tops, bushel	1 3-	1 6
— per bag	2 0	—
Watercress:		
— dozen	0 4-	0 5

Remarks.—The s.s. Orvieto has arrived with a cargo of about 21,000 boxes of dessert varieties of Australian and Tasmanian Apples; and the s.s. Medic is due shortly with a larger consignment, including Pears. Other Apples obtainable are from Wenatchee (in boxes). Nova Scotian (in barrels), and French Russets (in cases). The arrivals of Cape Fruits this week, per s.s. Saxon, amounted to about 12,000 packages, consisting of Black and White Grapes, Pears, and Plums. Supplies of Forced Strawberries are increasing daily. Green Figs are obtainable. English and Belgian Black Grapes are now a gradually shortening supply. The quantities of home-grown Tomatos are increasing, but supplies of Teneriffe Tomatos have been shorter during the past week. Large quantities of Cucumbers reach the Market daily. Beans from the Channel Islands and the Worthing district are a much larger supply. Both forced and natural Seakale is abundant, the latter being sent in half sieves. English and French Asparagus continues to be a good supply for this time of the year. Ordinary green vegetables are plentiful, and difficult to dispose of.—*E. H. Rides, Covent Garden, April 1, 1913.*

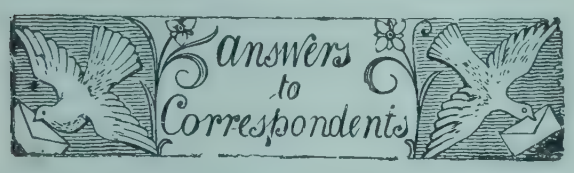
GARDENING APPOINTMENTS.

Mr. Henry Cooper, until recently Manager at the Gilltown Nurseries, Kilcullen, County Kildare, Ireland, as Manager at Wellington Nurseries, Broadstone, Dorsetshire.

Mr. F. G. Small, for the past 3½ years Gardener to Mrs. Mackinnon, Auchmore, Killin, Perthshire, as Gardener to J. O. Clemson, Esq., Stevenstone, Torrington, Devonshire.

ENQUIRIES AND REPLIES.

Stains on a Marble Floor.—Can any reader inform me the best way of removing from a marble floor (1) efflorescence stains, (2) mineral or rust stains, caused by the hoop bands of tubs? *H. W. D.*



Culture of Lilies: *A. W. D., Sevenoaks.* In reply to your letter Mr. Grove has written us as follows:—"The key to your correspondent's question is found in his use of the words 'given enough sun.' So far as the writer is aware, with one exception, Lilies are all naturally plants of the sun, just as Roses are; the exception is L. Leichtlinii, a rare Japanese Lily, which, according to Leichtlin, grows only in woods; it is true that L. auratum is found in copses and in clearings at the edges of mountain woods, while Dr. Henry has recorded L. giganteum as growing in Chinese forests, but we know that these two Lilies are more often met with in fully exposed positions, and it may safely be said that all Lilies, without exception, are native to countries where, as a general rule, the sun is a far more certain quantity than it is with us. It may seem something of a paradox that in a comparatively cool and sunless country such as ours, it should be thought necessary to plant any Lilies in what is generally referred to in horticultural parlance as half-shady places. The only object of doing so is to prolong the period of bloom, and in the case of certain species, such as L. japonicum, L. rubellum, L. Hansonii, and the various forms of L. washingtonianum, to preserve the natural colour of the flowers as long as possible, for when these particular Lilies are exposed to a fierce sun the blooms quickly lose their delicate colouring. The shade should never be dense, but just sufficient to temper the rays of the midday summer sun to the blooms; but when all is said and done, it is a question whether, on the whole, one does not lose as much as is to be gained by planting Lilies in any sort of shade, for while it serves some purpose in blistering summers like that of 1911, it would only make things worse for the plants in such a miserable season as we had last year. Then, again, it should be remembered that Lilies ripen seed more surely in the open than when shaded, and as the plants should always be grown from seed this is a material consideration. If, as appears to be the case, your correspondent is making a beginning in the cultivation of Lilies, he may be advised for the present to put aside all notions of shade, and plant every species in full exposure, taking care, of course, to carpet the ground over the roots. Underground irrigation can be managed quite well by the method proposed, though nothing is to be gained by taking the pipes so deep as 3 feet; half that depth should be ample. The Lily grower provides irrigation largely as a precaution against the effects of prolonged drought, and it may well be that a summer or two may pass without his having to resort to artificial watering at all; the fact that water is available, however, enables him to carry under-drainage to a point that would be excessive in average summers if the water were not to hand when wanted. With some Lilies quick drainage in winter is essential, and the want of it is at the bottom of many failures. In the tropical summer of two years ago hundreds of lily bulbs must have perished of thirst, but the number can hardly be in excess of the deaths due to drowning during the winter just ended, in gardens where the drainage has not been given attention."

Freesia Bulbs Not Flowering: *T. C.* The reason why corms are so frequently produced instead of blooms is not known. There is no disease present.

Insects on Foliage of Water Lilies: *Water Gardens.* The insects that have caused the damage may be killed by a weak solution of lime water. The pest has apparently been causing injury to the leaves for some time past. There are also indications that point to the water not being fresh. Lift the plants, remove all the soil, and replant in fresh, yellow loam. When this has been done, thoroughly cleanse the tank with soft soap and warm water, afterwards applying a weak solution of lime wash. Allow the tank to remain for a week or ten days before filling it with water, and leave it undisturbed again for a similar time. Meanwhile, prepare the loam and have all in readiness for replanting. Place a thin layer of crocks over the bottom as in crocking a pot; cover these first with a layer of decayed leaves, and afterwards with the loam. If the latter is of a heavy or clayey nature add road-scrapings to lighten it. Arrange stones around the plants to keep the latter in position. Whilst the Lilies are out of the tank let them be kept in tubs or tanks of water, and keep a watch for any indications of the insect. If it be still detected, mix a little lime with the water. When the Lilies are lifted in the first instance, remove all sour, inert soil, and any decaying roots. It will well repay for the trouble if the old soil is washed completely from the plants. The lime water should be applied with a syringe, so that the under surfaces of the leaves are wetted with it. If the Lilies are replanted in the tank by the end of April the work will be done in good time.

Lily-of-the-Valley for Market: *F. R.* Owing to its popularity, the Lily-of-the-Valley always ensures a ready sale, but your proposal to grow about 2,000 spikes a week for market is scarcely likely to prove remunerative. Messrs. T. Rochford and Sons, Turnford Hall Nurseries, Broxbourne; Mr. W. Iceton, Putney Park Lane; and Mr. T. Jannock, Dersingham, Norfolk, are large growers of this plant for market, and they send the blooms not only to the London markets, but all over the country, especially to the large towns and cities. It must be evident that you would be unable to compete with large firms in the open market, particularly as you have no appliances for retarding, and would be compelled to buy your retarded crowns from them. The method likely to prove the more successful is to work up a local connection. In this case you will find that good quality blooms, prices that compare favourably with others, and regular supplies throughout the year are all matters the due observance of which are necessary to success.

Names of Plants: *B. T. B.* 1, Bifrenaria Harrisoniæ, often called Lycaste Harrisoniæ in gardens; 2, a variety of Dendrobium nobile; 3, Pernettya mucronata; 4, Thuya orientalis; 5, Pinus Cembra.—*R. O.* 1, Cochlioda rosea; 2, Octomeria graminifolia; 3, Bulbophyllum Calamaria; 4, Pleurothallis lateritia; 5, Oncidium barbatum; 6, Pteris geraniifolia.—*L. G. P.* Rondeletia amœna.—*H. Dew.* Cantua buxifolia.

Rock-Garden: *Belgium.* The position—south, turning a little to west at one end, and the fine soil—certainly sounds very favourable for the formation of a first-class rock-garden. If, as we suppose, it is not desired to make the slope into one continuous rockery, a succession of three or four low crags or groups of rockwork jutting out from the bank should be formed, dotting the intervals between these groups with a few of the larger, more ornamental, and rounded boulders, and planted, by all means, with Briars. These plants, however, should be kept well to the back, or the result might be a succession of "sun-traps," hot and dry. On such soil you should not attempt to build very high. The end turning slightly to the west might be devoted to forming a moraine; under any circumstances it should be kept free of Briars, as it will probably be found that several plants that will not flourish on the very sunny slope will do well there. In planting do not put the Briars actually amongst the Alpines, except, perhaps, for a very small one here and there; but there will be no need of even this, unless it is proposed to make the whole bank one rockery. However, if found advisable to relieve things somewhat by a few Briars amongst the Alpines, the kinds planted should be of the habit of the double dwarf yellow Dog Rose or the white Rosa spinosissima. Iris Kaempferi will require a very damp soil, and would probably do best in a kind of retaining basin of clay filled with the soil. These plants would look best at the extreme end of the western slope.

Shorthand: *A Constant Subscriber.* It is difficult to see what position you could hold other than a clerical one, in which shorthand would be a great advantage. You might secure occasional employment as reporter at horticultural shows, but for this you would need experience in writing. On the whole, we think you would probably do better to stick to practical horticulture.

Vine Leaves Unsatisfactory: *E. C. P.* The leaves submitted to us for examination are very thin, and do not contain sufficient substance to enable them to bear the daylight, the cause of which cannot be explained without more particulars. You should state the nature of the soil in which the Vines are planted, whether the roots are inside or outside of the house, and if inside, whether there is much watering of other plants on the border, which might make the soil sour. You should also state what was the prevailing temperature during the winter, the date when growth commenced, and the temperatures at that time and since. Are there any other Vines in the same house, and if so what is their condition?

Vine Shoots: *W. B.* There is no fungus disease present. The leaves have been chilled when very young, which accounts for the brown blotches.

Communications Received.—H. R. (thanks for 2s. for R.G.O.F. box)—Ascot—J. H. A.—S. D. and Sons—Constant Reader—J. W.—W. G. S.—W. L.—W. D. R.—W. J.—W. J. G.—E. W.—F. E.—J. D.—W. C.—J. B.—R. L. H.—G. E. L.—W. B. H.—S. A.—C. W.—T. S.—H. R., Holland—T. F. M.—E. L.—O. H., Colchester—E. A.—W. G. K.—F. M.—L. K.—A. S.—W. F.—R. A., France—L. F. P.—R. N., Uppsala—E. S. R. T.—M. C. C.—M. M.—R. E. A.—R. F.—R. B.

THE
Gardeners' Chronicle

No. 1,372.—SATURDAY, April 12, 1913.

CONTENTS.

Alpine plants, distribution of	230
America, endowment of horticulture in	237
Apples and Peaches, cold storage of	236
Board of Agriculture, appointments to horticultural branch of	237
Books, notices of—Botanical Magazine	237
Dahlias	240
Bulb garden—Poetaz Narcissi	239
Chrysanthemum cuttings, sulphur in soil for	240
Chrysanthemums, magnesium salts and	237
Coke, selling by weight	240
Columnea glabra major	238
Edinburgh Royal Botanic Garden	240
Forestry—Timber of the Lebanon Cedar	239
Fruit-trees, spraying, when in flower	241
Glass-houses, movable	241
Grass, a mud-binding	237
Gregynog, Montgomeryshire	232
Irises, dwarf	229
Italian Gardeners' Association	237
Kew, appointments from	237
Lathyrus sativus as a food for horses	240
Leadbetter, Mr. J. P.	240
Mazus rugosus	240
Narcissus, "White Emperor"	239
Nursery and Seed Trade	242
Obituary—Gilmore, Thomas	243
Orchid notes and gleanings—Cypripedium insigne Sanderæ	230
Cypripedium "Roundhead"	230
Odontoglossum splendidissimum	230
Orchid show at Birmingham	230
Plants, new or noteworthy—Two hybrid Rhododendrons	230
Plants which never grow up	236
Potato "seed," scarcity of	237
Primula Conference, the forthcoming	236
Primula Fortunei	238
Seymour, Mr. E. J., appointment of	230
Societies—Horticultural Club	243
Liverpool Hort.	242
Manchester & North of England Orchid	242
Midland Reafforesting	237
Royal Hort. 237,	242
Scottish Hort.	242
South African Combretaceæ, the	231
Tree-growth, effect of grass on	238
Week's work, the 233,	234

ILLUSTRATIONS.

Cypripedium "Roundhead"	230
Dahlias Mrs. Jonnson Hicks, Cardinal, Modesty and Goldfinch (Coloured Supplement)	
Greenhouses, movable	241
Gregynog, Montgomeryshire	233
Narcissus "White Emperor"	239
Primula Fortunei	238

DWARF IRISES FOR THE SPRING GARDEN.

THE Irises I propose to describe are very free-flowering, and useful both for forming clumps in the rock-garden and providing a neat edging on the margin of a shrubbery or herbaceous border. They require full exposure to sunshine.

There are many colour varieties, and they are mostly forms of the two species Iris pumila and Iris Chamaeiris. Some of them ripen seed in this country, and the seedlings show much diversity; they are easy to grow, and usually flower in the second year. The colours vary from an azure-blue to light and dark purple, and from yellow to a creamy white.

The many forms of these little bearded Irises are apt to be confusing, especially as they are sent out under so many different names, but there are some distinctive characters which help to classify them under the different species.

I. pumila is a native of Eastern Europe. It loses its foliage more or less completely in autumn, and the young leaves appear in early spring, when they are commonly a prey to slugs. They need careful watching and frequent dustings of slug destroying powder, especially in such a continuously wet season as the one we have at present.

The flowers are borne singly on a very short stem, but are raised above the foliage by the fact of possessing a long perianth-tube. They are not much taller than four inches above the ground. The flowers are of a good shape, the standards rising to a cone, and the falls hanging down and displaying the beard. One of the finest is known as Iris pumila coerulea, and is a delicate china blue with purple shades. A large batch of these seen on a sunny morning, with the flowers so closely set that hardly any foliage is visible, is a sight to remember.

The purple and yellow forms make an effective contrast to one another. They may be had in flower throughout April.

Some pretty varieties were sent out a few years ago by Mr. Caparne, of Guernsey, apparently hybrids between I. pumila and I. Chamaeiris, which may still be obtainable. These were described by Mr. Caparne in the *Gardeners' Chronicle*, November 30, 1901, p. 397, and one of the hybrids was the subject of the Supplementary Illustration in that issue. A very early one, named Delicata, with ivory standards and cream-coloured falls, began flowering on March 18, but mid-April is more usual; coerulea will be out quite early in April this year. Among other pretty forms are Grandee, purple with yellow beard; Vestal, clear yellow; Alice, yellow with brown markings; and Mazarin, light yellow with darker stripes. They continue in flower throughout the latter part of April and May.

I. Chamaeiris is a plant of Western Europe, and taller than those already described. The new foliage is developed in autumn, very shortly after the old leaves have died away, so that the clumps have a green appearance during winter, but the leaves are generally much disfigured by slug-bites, as they are more full of juice than most plants at that time of year.

The flowering stems rise six or eight inches high, and carry one or two flowers. The flowers are usually in shades of brighter or paler yellow, and are sometimes very sweetly scented, especially one form, often called lutescens, which grows about a foot high. A deep purple form has been named italica; another form, olbiensis, is found with both purple and yellow flowers.

The floral tube in I. Chamaeiris is very much shorter than in I. pumila, averaging about an inch. Irises have several different perfumes, but all the scented ones of this group, italica, Statellae, etc., recall the Lily-of-the-Valley. I. pumila has no scent.

A delightfully pretty Iris that I have had from Sicily is I. Pseudo-pumila, or panormitana (named from Palermo). It has yellow standards and styles, and crimson falls with a white, yellow-tipped beard. Unfortunately it did not acclimatise itself to this country, and only flowered one season, at the end of April.

An elegant Iris, which is closely allied to, or a hybrid of, I. Pseudo-pumila, and emanates also from Sicily, is Iris Statellae. It is rather sensitive to frosts, and should be planted in a sheltered spot, as it is an early flowerer, blooming from about April 15 to the end of May. It is prolific in blooms, and the flowering season lasts quite a month each year. The whole appearance of the flowers is singularly globular; the rounded standards, well held up, narrow quickly into the claw; the falls are nearly as large, and bend back so that their tips just touch the floral tube. The colour is a delicate creamy ivory, with faint olive-green markings on the claw, and there is a faint perfume. The flowers are one or two on the stem, which is from twelve to fourteen inches high.

Iris balkana is a fine purple species, allied to I. Chamaeiris, but its home is in Eastern Europe, and its foliage only appears in spring, and is short and recurved at flowering time. The deep blue-purple falls have a blue beard; the styles are reddish-purple and the pollen blue.

Another species from Middle and Eastern Europe, which includes several forms, is I. aphylla. This is distinguished by the foliage only appearing above ground late in spring, just at the end of March, and by the stem being branched quite low down and again above, so that several flowers are borne in succession on each stem. The foliage is broad and recurved, and the flowers are a rich claret-purple, the falls deeper in colour than the standards; the beard is white tipped with purple. It flowers from the middle of May to the first week in June. A form of this plant known as gracilis is exceedingly floriferous, and most deliciously scented; it flowers throughout the whole of May, but it is a sombre-coloured Iris, having a groundwork of dull greenish-yellow, irregularly blotched with dingy purple. Were it not for its delicious odour and the masses of flowers with which the clumps are covered, it would not often be seen in gardens.

All these little Irises grow freely in ordinary garden soil, but that is no reason why they should not have proper attention. Neglected clumps with centres of dead rhizomes and some straggling stems on the periphery are not pleasant to look upon, but I fear are not wholly unknown. In fact, they grow so quickly in a good, well-enriched and well-drained loam that they need taking up about every three years, as soon as they have finished flowering. Fresh soil should be worked in, the effete rhizomes removed, and the young healthy ones replanted firmly, just on the surface of the soil. Then the new fibrous roots will grow downwards, and the rhizomes will have the full benefit of sun-baking, which is so necessary for the preparation of next season's flowers.

Let no one plant these Irises in the shade and expect them to flower! *Eleonora Armitage, Druidnor, Ross.*

NEW OR NOTEWORTHY PLANTS.

TWO HYBRID RHODODENDRONS.

THERE are two Rhododendrons in flower now at Kew (March 28) which require to be re-named. One is called R. dahuricum sempervirens, but it does not appear to be any form of R. dahuricum, though it is probably a hybrid between that species and some other. I would say that the other parent is R. ciliatum were not this the parentage of R. præcox. The same plant is grown by Messrs. J. Veitch and Sons as R. amœnum, a name that would do very well were it not that the garden Azalea, A. amœna, is now known by that appellation. Flowering quite early in the year, earlier than R. præcox, and being quite as showy as that plant (there is a close resemblance between these two), it is worth including among garden favourites. A good name for it would be R. emasculum, as the stamens appear to be aborted in all the flowers. The second plant is called R. virgatum album. This came from the Edinburgh Botanic Garden several years ago. It is not a form of R. virgatum, but it may be a hybrid between that and some other species, possibly R. hirsutum. There is some resemblance between it and R. multiflorum, which is a hybrid between R. virgatum and R. ciliatum, but the leaves and calyx differ. The true R. virgatum is not easy to cultivate, and is comparatively tender, whereas this Edinburgh plant grows very freely and flowers profusely. The flowers, which are pinkish-white, are arranged singly in the axils of the upper leaves on the twiggy shoots, after the manner of R. racemosum, and each flower is surrounded at the base with rather large brown caducous bracts. The plant is bushy, and is very decorative when in flower. A suitable name for it would be R. pallidum. It looks like a plant that would be serviceable if grown in the form of little bushes, either in pots or planted out, to be used for early forcing. *W. W.*



FIG. 101.—CYPRIPEDIUM "ROUNDHEAD." PETALS, YELLOW TINGED WITH MAHOGANY-RED. Awarded R.H.S. First-Class Certificate on April 1, 1913.

ORCHID NOTES AND GLEANINGS.

CYPRIPEDIUM "ROUNDHEAD."

THE aim of the hybridist is to obtain improvements on existing varieties, and in Cypripedium "Roundhead" (see fig. 101), Lieut.-Col. Sir George L. Holford, K.C.V.O. (gr. Mr. H. G. Alexander), by crossing C. Earl of Tankerville with C. nitens, has well attained that object, the hybrid being a great advance in every respect on C. Earl of Tankerville. The pure-white upper half of the dorsal sepal contrasts well with the blackish-chocolate markings of the lower part of the flower.

CYPRIPEDIUM INSIGNE SANDERÆ.

THE April number of the *Orchid World* has a very interesting article on the origin of this favourite Cypripedium, together with the fine illustration by colour photography from *Orchids*, by Mr. James O'Brien, V.M.H., and which formed one of the popular series, *Present-Day Gardening*, edited by Mr. R. Hooper Pearson. An appreciative notice of the useful little book is also given. A portrait of Alderman William Bolton, with an account of his collections, with several illustrations; a list of new Orchids and various other interesting articles go to make an exceptionally good issue.

ODONTOGLOSSUM SPLENDIDISSIMUM.

A FORM of this pretty hybrid, raised and now flowering in the collection of Mrs. Norman C. Cookson, Oakwood, Wylam (gr. Mr. H. J. Chapman), gives a good example of the satisfactory results of cross-breeding with an exact purpose. Some years ago Mr. Chapman raised a pretty and richly-blotched form of O. ardentissimum by crossing a blotched form of O. crispum with the pollen of the rare and handsome O. Pescatorei Veitchii. The hybrid was again crossed with O. Pescatorei Veitchii, and the seedlings bearing the name O. splendidissimum, approach very closely to that variety, the blooms being scarcely distinguishable from O. Pescatorei, and the bars and blotches of rosy mauve are arranged much as in the variety Veitchii. Many other distinct hybrid Odontoglossums and seedling forms of blotched O. crispum are in flower, also a very attractive form of O. waltoniense with a large violet coloured blotch on the lip.

ORCHID SHOW AT BIRMINGHAM.

THE annual show of Orchids and early summer flowers, under the auspices of the Birmingham Botanical and Horticultural Society, will be held at the Botanical Gardens, Edgbaston, on Wednesday, June 11. Honorary exhibits of Fruits, Flowers and Vegetables will be welcomed. Particulars may be obtained from Mr. T. Humphreys, Botanical Gardens, Edgbaston.

MR. E. J. SEYMOUR.

IT is announced that Mr. E. J. Seymour, well known in the Orchid trade, has been appointed representative of Messrs. Armstrong and Brown, Orchidhurst, Tunbridge Wells, and that he has already taken up his new duties.

DISTRIBUTION OF ALPINE PLANTS.

(*Concluded from page* 208.)

ANOTHER rare plant peculiar to the Grayan Alps is the famous Matthiola pedemontana (see *Gardeners' Chronicle*, March 8, 1913, fig. 68). It is distinct in many respects from M. valesiaca, but chiefly in the colour of the flower, which is dark grey or purple, often with a greenish tint. Saponaria lutea has here its centre, as also have

Hieracium eriophyllum, Potentilla sanguisorbifolia (never found elsewhere), Saxifraga augustana (a form of retusa), and Achillea Correvonii.

We will now consider the Pennine Alps (Valais) which surround the Simplon Pass, where there is another centre of origin. Matthiola valesiaca and Campanula excisa are the best types produced in this region of the Swiss Alps.

The Bernina group is by far the best territory in the central chain from the point of view of species. It lies between the wide Engadine Valley and the Valteline, facing the Bergamese Alps. A railway runs from St. Moritz to the pass and hospice of the Bernina (about 7,000 feet high); and is perhaps the only mountain railway which does not mar the beauty of the surroundings. It runs partly on the road and partly through the large rocks as far as Poschiavo, after which a smiling valley has its termination at Tirano in Italy (Valteline). From the carriage windows one may see whole fields of Polemonium cœruleum, Gentiana punctata and G. purpurea; Dianthus speciosus, many species of Orchids, carpets of Linnæa borealis, Trientalis europæa, Senecio carniolicus, Primula integrifolia, P. latifolia, and Azalea procumbens. On the way down to Poschiavo the railroad passes through dry slopes adorned with masses of Lilium bulbiferum, which produce a brilliant display in June and July. Just below the hospice (the station is "Berninahäuser") lies a little valley named "Valfaene" or "Hay Valley." It should be named "Flower Valley," for here there is a profusion of blooms of all kinds, such as one seldom sees elsewhere; the number and beauty of the varieties represented can scarcely be surpassed, even in the Lautaret. Papaver rhæticum, Saxifraga rhætica, Primula Muretiana, P. rhætica, P. Berninæ—these are a few of the varieties here produced. There are also very many more—whole fields of Soldanella pusilla and Primula integrifolia, of Senecio abrotanifolius and Allium Victorialis, of Orchis hybrida, Nigritella suaveolens, Sempervivum Wulfenii, and others. §

At the end of the valley a narrow gorge leads to the Val Viola in Italy, and beyond this to Livigno, where the Italian Alpine Club is beginning to form a Reservation park close to that begun three years ago by the Swiss Club. The Swiss garden, or National Park, in the Lower Engadine, covers five valleys, the combined area of which is as large as a canton. In this reserve everything is conserved in its natural style; and the park is not confined to horticulture, the last few wild bears having made it their home! The territory was chosen on account of its abundant flora; and there is every likelihood that the Italian park will be as successful as the Swiss.

Not far away there is a little valley where Viola Comollia first saw the light. This Viola is one of the most brilliantly coloured alpines. It has very bright pink flowers, quite as bright as those of Silene acaulis; the under side of the petals is a greenish yellow. It is nearly allied to V. cenisia and V. nummularifolia, and the exquisite scent adds to its many charms. It grows in large clumps between the rocks, and in order to remove it satisfactorily it is necessary to take the central root, as in the case of Campanula Allionii and Viola cenisia. Even then there is little chance of growing it; the best way is to take cuttings or seeds. It then does remarkably well, even in England.

On the Bergamese Alps, to the south of the Bernina group, there is quite a collection of endemic plants. Androsace Charpentieri, which extends as far as the Canton of Tessin, in Switzerland; Campanula Raineri and C. elatinoides, Viola declinata, Sanguisorba Vallistellinæ, Saxifraga Vandellii, Primula calycina (glaucescens), Phyteuma comosum, which has here its centre of origin, Achillea Clavennæ, Silene Elizabethæ (as far as the Lago di Garda), Telekia speciosissima, etc. Daphne striata, a fine plant nearly allied to D. Cneorum, seems to have here its geographic centre.

We now come to the extensive group in South Tyrol known as the Dolomites, which, as centres of production of Alpine plants, take a high place. Here we find Rhododendron Chamæcistus, Daphne rupestris = D. petræa; the Pæderotas; Valeriana saxatilis; Dianthus alpinus and D. glacialis; Campanula Morettiana; Geranium argenteum (this latter is probably of western origin, and endemic to Dauphigny, where it is found; the Pyrenees have, as an endemic, a plant very nearly allied in G. cinereum), Phyteuma humile, Viola alpina, Scorzonera rosea, Silene Pumilio, Daphne Blagayana (in the extreme east), Asplenium Seelosii, Wulfenia carinthiaca, Gentiana frigida, G. Frœlichii, and G. pumila; and many varieties of Primula, of which I will only mention P. glutinosa, P. tyrolensis, P. spectabilis, P. minima, and P. Wulfeniana.

The distribution of the plants in the Alpine chain is somewhat puzzling; it is, for instance, impossible to explain by phytogeography the fact that some plants are found in the Pyrenees and also in the Balkans, but not on the Alps. Take, for example, the case of Ramondias. Until 1878 R. pyrenaica was considered a monotype, and found only in the Pyrenees. Then, quite suddenly, Dr. Petrovitch, of Belgrade, discovered two new species (R. serbica and R. Nathaliæ) in the Salia-Planina near Nisch, in the Balkans—both evidently of the same parentage as R. pyrenaica. Another similar case is that of Gentiana pyrenaica. This plant is nowhere to be found in the Alps, but in the Pyrenees it abounds, and also in the Balkans. The same may be said of the Saxifragas of the Thessalica group (Kabschya), S. media = calicyflora of the Pyrenees, which is nearly allied to Thessalica; Frederici-Augustii, luteo-purpurea, and porophylla.

In a word, the Alpine chain may be said to contain, here and there, isolated points where certain species have had their origin. From these points the plants have spread to neighbouring districts, but are not really endemic to them, and are not thoroughly dispersed throughout the chain. These centres are never to be found in the high mountains in the north of the Alps, but are confined, generally speaking, to the lower, limestone regions, which are much richer in species than the granitic or crystalline formations.

It is difficult, perhaps impossible, for students of phytogeography to explain all these facts; but it is interesting for all, whether gardeners or botanists, to note the phenomena, and to investigate their causes. *H. Correvon, Floraire, Geneva.*

§ Prof. Brugger, of Chur, has published a list of endemic plants or hybrids found on this part of the Alpine chain. ("Mittheilungen über Kritische Formen, &c.)

THE SOUTH AFRICAN COMBRETACEÆ.

(*Concluded from page* 201.)

21.—Combretum truncatum, *Welwitsch, ex Lawson*, in Oliver's *Flora Trop. Africa*, ii., 427 (1871), (not Engler).

A much-branched, often spinous shrub or tree, attaining to a height of 10 to 20 m. in favourable localities; second year's shoots terete, longitudinally striate, brownish, with scattered reddish scales, glabrous; lateral twigs very short, compressed, and angulate, thickly ruby-red-lepidote, glabrous. Leaves subopposite, ascending and imbricate, or spreading; petiole densely lepidote, glabrous, ruby-red, 1 to 3 mm. long; leaf-blade obovate, rounded and inconspicuously mucronate at the apex, narrowing from the middle to the base, 3 to 4.3 cm. long, 1.5 to 2.1 cm. broad, thinly coriaceous, pale glaucescent green and glabrous on both sides, and thinly covered with silvery-whitish scales, except those on the midrib, which are of a reddish tinge; lateral nerves obscure; margin closely undulate. Spikes slender, narrowly cylindric, simple or branched, nearly equalling the leaves or longer than them, and covered all over with reddish scales. Flowers small, pale yellow or green, fragrant, bracts minute, deciduous. Receptacle 3.8 to 3.9 mm. long, its lower half narrowly ellipsoid, its upper plate-like, deciduous, disk flat, pilose; calyx-segments deltoid. Petals oblanceolate or obovate, 1.2 mm. long, 0.4 mm. broad, glabrous, whitish or yellowish. Stamens exserted, 4 to 5 mm. long. Style conspicuously glandular, subulate. Fruit four-winged, broadly quadrate, rounded, and slightly emarginate at the apex, truncate at the base, 13 to 14 mm. long, 17 mm. broad, the body brownish or thickly covered with silvery scales, the wings yellowish and 6 mm. broad; pedicel short, lepidote, 1 mm. long.

Hiern, *Cat. Welwitsch Afric. Plants*, ii. 346 (1898). Sim *Forest Fl. Port. East Africa*, 62 t. lxii, B (1909). C. elæagnoides, Klotzsch in *Peters Mossamb. Bot.*, 73 (1862,) Lawson, l.c., 426 (in part). Hiern, l.c., 346. C. Petersii-Engler in *Pflanzenwelt Ost-Afrik. C.*, 296 (in part). C. imberbe var. Petersii, Engler and Diels, l.c., 14 t. ii, f.C., Engler and Gilchrist in Warburg's Kunene-Sambesi Exp., 314 (1908). Argyrodendron Petersii, Klotzsch in *Peters Reise nach Mossamb.*, 101 (1862).

Kalahari Region.—Transvaal; without precise locality, Grenfell, 29 (fruit. spec.). Cave Mountains, Nelson, 113 (flow. spec.).

Grenfell's and Nelson's specimens are the first record of the occurrence of this species in the Transvaal, but unfortunately the former is not accompanied by any precise information as to locality. At Benguella, in Angola, it forms a tree of moderate size* with a spreading, broad, lofty crown, and was first discovered there by Welwitsch in sandy maritime situations between the city of Benguella and the River Catumbella. In very dry localities a dwarfing of the plants results, accompanied by the development of spines up to 4 inches long. The general facies of the species is imminently suggestive of an Elæagnus, a simulation strengthened by the occurrence of the lepidote scales which clothe twigs, leaves and inflorescences. On the Kwebe Hills in Ngamiland, Tropical Africa, the species ascends to 3,300 feet elevation, and the natives allude to the tree there as "Mogimbiti," in Portuguese territory as "Mondu" and "Mondu-v-hlovu," and in Angola the Dutch emigrants know it by the name of "Eisterhout," and the Kaffirs as "Umkuk."

Gall-growths, very similar to the "Dancing Galls," which obtain on Rhus mucronata at the Cape, occasionally infest C. truncatum.

According to Hiern (l.c. 346), the wood is excellent, hard, durable, and tenacious, and like that of Lignum vitæ, hence the name "Lignum vitæ Tree." Of it, Sim mentions that it is a very pretty dark wood, almost like ebony. In large trees 1 metre diameter, almost all heartwood, with a small yellowish sapwood. Does not rot, nor is damaged by white ants; so cross-grained it cannot split; splendid for mallets; lasts in water, and for poles in the ground. Very hard and heavy. Not much used because so difficult to work, as chisels are damaged by one or two strokes at mortising. Formerly burned into form and used as hoes by the natives before iron hoes were introduced. Present in considerable quantity and as large trees from the Limpopo southward (l.c. 126).

3.—Pteleopsis, Engler.

1.—Pteleopsis myrtifolia, *Engler and Diels* in Engler's *Monograph Afrik. Pfl. Fam.*, iv., 4, t. I., f.B. (1900).

A divaricately-branched, occasionally scandent shrub or small tree, 4 to 15 m. high; second year's branchlets greyish or brownish, stringy-barked, glabrous; the ultimate twigs glabrous, sparingly sericeous or pilose. Leaves usually opposite or alternate, spreading or ascending, and subimbricate; petiole slender, 4 to 6 mm. long, sparingly sericeous, or wholly glabrous; leaf-blade narrowly elliptic or ovate-lanceolate

* Sim gives its height in Portuguese East Africa as 20-30m. with a trunk-circumference of 3-4 m., with deeply fissured and tesselated light-grey bark, and states that the wood is so hard that, before the advent of iron hoes, it was used as a substitute. According to the same author, it is frequent at Lorenco Marquez, Maputa, and Marracuene, occurring also from the Limpopo to Inhambane, but was not noticed north of Quelimane, except in one place between Mucuba and Nhamacurra, and there it was abundant for half a mile, and no other tree mixed with it, except a small Piptea

(rarely obovate and emarginate), obtuse or subacute, narrowing towards the base, 1.4 to 6 cm. long, 8 mm. to 1.5 cm. broad, thinly coriaceous, entirely glabrous on both surfaces at maturity, or with a few scattered hairs on the midrib, dark shiny or dull-green above, with the midrib impressed, but the lateral veins raised, the lower surface paler with a raised costa, but obscure reticulations. Racemes axillary, solitary, shorter than the leaves, often hemispheric, 1 to 1.5 cm. diameter, invariably wholly glabrous, or the peduncle slightly pilose or bearded at the insertion of the pedicels. Flowers shortly pedicelled or sessile, staminate or perfect, fragrant; bracts inconspicuous, deciduous. Receptacle 5.5 mm. long, externally glabrous, its lower part in perfect flowers narrowly fusiform; in staminate flowers filiform, its upper part broadly cup-shaped, 3.5 to 4 mm. in diameter; disk lobed, with long marginal hairs; calyx teeth obsolete or very shortly and broadly deltoid, subobtuse. Petals clawed, broadly ovate or obovate, 2 mm. long, 1.2 mm. broad, glabrous, yellowish. Stamens 5 to 6 mm. long, glabrous. Style stoutly subulate, not exceeding the stamens, glabrous. Fruit 2- to 4-winged, borne on a slender glabrous pedicel, 1 to 1.2 cm. long, variable in outline, usually broadly oval or occasionally broadly cuneate, emarginate at the apex, narrowing into the pedicel or obliquely rounded or cuneate, 1.5 to 1.8 cm. long, 0.8 to 1.2 cm. broad, glabrous; the body convex, dark madder-brown or brown; the wings membranous, straw-coloured or pale brown, 4 to 6 mm. broad.

Combretum myrtifolium, Lawson in Oliver's *Fl. Trop. Afr.* ii, 431 (1871), in part. Pteleopsis variifolia, Engler, *Pflanzenwelt Ostafrik.* C., 293 (1895).

Pteleopsis, a genus recently founded by Engler*, differs from Combretum in the occurrence of dicœcious flowers, and the reduction in number of wings of the fruit to three or two. Of its four species, only one, viz., P. myrtifolium, Engler and Diels, passes the Tropic of Capricorn into South African territory, where, at Lorenço Marquez, a rather small-leaved form was collected by Dr. R. Schlechter (Nr. 11704), at low elevations, in December, 1897. It extends northwards to Masinga, and as far along the east coast as British and German East Africa, where, in the latter territory, the vernacular "mbilibili," "mssimssole," "mlaquenzi," "muliaquenzi," and "tassin" are applied to it. In consequence of its relative wide diffusion, the species is subject to variation, which it exhibits in its polymorphic leaves, their difference as regards size, the absence or presence and nature of the pubescence on the twigs, and the form and size of their fruit. Lawson's C. myrtifolium, I am inclined to suspect, is a composite species, of which the specimen collected by Kirk between Lupata and Tette, agreeing with Engler's type of P. variifolia, I assume to be representative of the species, but the other specimen gathered by the same collector at the Rovuma River (March, 1861), which Lawson quotes also under that species, differs considerably in the long-spreading pubescence of the twigs, the relatively large leaves, their slight basal obliquity, and their sericeous indumentum.† According to Engler and Diels (l.c. 3), P. myrtifolium is a characteristic tree or shrub of the savannah around Usaramos and Usambara, occurring often gregariously but occasionally also as solitary individuals. The hard, durable whitish wood of the allied P. diptera, Engler and Diels, a species frequent in Angola, labouring under the vernacular "Gususso," is extensively utilised for boards, and is highly prized for other purposes.

* *Pflanzenwelt Ostafrikas* C., 293 (1895).

† This species, which I have provisionally named P. Swynnertonii, agrees also with a specimen collected recently by Swynnerton in Gazaland (No. 48), of which he gives the Chindas name as "Musunganyemba," and says that "the bark is very dark and rough externally, pale yellowish-brown when cut, and used for beehives and bark rope. The wood is white and very tough, with a reddish-brown heart, and like Adina Galpinii, is much sought after for Maize and stamping-sticks owing to its toughness."

‡ This specimen was distributed under the name of Laisosiphon.

4.—QUISQUALIS, RUMPF.

1.—Q. PARVIFLORA, *Gerrard* ex Sonder in Harv. and Sond, *Fl. Cap.*, ii, 512 (1862).

A lax shrub; twigs slender, straight, or often twining, terete or slightly compressed towards their extremities, chestnut-brown, with spreading pubescence; internodes 2 to 4 cm. long. Leaves opposite, subopposite (rarely alternate), ascending—spreading; petiole averaging 3 mm. long, sericeous or pilose, grooved ventrally; leaf-blade oval-oblong, cuspidate-acuminate, the cusp invariably blunt, rounded or subcordate at the base, 4 to 10 cm. long, 1.7 to 4 cm. broad, thin in texture, dark dull green, with scattered long appressed hairs on the upper surface, paler below, and with scattered pubescence, which is densest about the pale cream raised midrib and its 5 to 8 pairs of principal lateral nerves; axil-tufts present; margin plane or slightly wavy. Spike terminal or axillary, umbelliform, 2 to 2.5 cm. in diameter; peduncle 2 to 2.5 cm. long, pilose; flowers cream-coloured; bracts lanceolate, acute, 2 to 3 mm. long. Calyx slender, narrowly tubular, straight, 1.4 to 2 cm. long, 1.5 to 2 mm. broad, slightly inflated at the base, externally puberulous; calyx teeth deltoid, acute, 1 mm. long, puberulous. Petals oblong, rounded at the apex, 4 mm. long, 2.7 mm. broad, puberulous externally, hispidulous on the inner side. Stamens 10, disposed towards the apex of the calyx-tube in two series, glabrous; anthers oval or orbicular, 0.7 mm. long; filaments scarcely 0.5 mm. long. Style filiform, slightly exceeding the receptacular tube, glabrous; stigma truncate. Fruit unknown.

Wood in *Trans.* Phil. Soc. S. Africa, xviii, ii, 156 (1908). Quisqualis natalensis, Engler and Diels in Engler *Pfl. Afrik.* iv., 6 (1900).

Eastern Region.—Natal, Gerrard, 778 (flow. spec.). Umhloti, Gerrard and McKen (both spec. in *Herb. Kew*). Zululand, Ngoya, 600 m., March, 1907, Wylie ex *Herb. Wood* and *Kew*, 10,608 (flow. spec.‡).

The puzzling nature of the flowers incited Rumpf, a botanist of the 18th century, to adopt the generic compound Quisqualis, e.g., *quis*—who, *qualis*—what kind, for the species then known; and not inappropriately, for the homology of certain of the floral organs is certainly not appreciated at a glance, and the superficial aspect of the flowers is more remindful of certain Eranthema than members of the Polypetalæ. Quisqualis parviflora, the only South African representative of the genus, is confined to Natal and Zululand, and exhibits affinities to Q. indica, a widely diffused species, which occurs in Asia, New Guinea, tropical Africa, the West Indies and South America (Venezuela). The third species, viz., Q. falcata, native of Africa, was found by Welwitsch in Angola, and, though a near ally to the Natalian, differs in its almost glabrous leaves, and falcate narrower acuminate bracts. *R. A. Dümmer.*

GREGYNOG.

IN the mid-uplands of Montgomeryshire, seven miles from Newtown the "flannel metropolis" of Wales, and about five miles north of the river Severn, the beautiful Elizabethan home of Baron Joicey nestles amid pine and bracken-clad hills. A lovely valley falls away westward through park, hamlet and woodland, bounded in the far distance by the towering peaks of Breconshire.

Lord Joicey has enlarged the mansion and considerably embellished the gardens within the last two decades, but since my visit took place, an announcement has been made that the estate is for sale.

The Sudeleys, who previously owned the property, inherited it (I believe) from the "Blayney" family, who claimed direct descent from "Brochwel Ysgythrog," a Prince of Powys. The historian, Pennant, records a visit to Gregynog, during which he found much to interest him in the district. The Romans are believed to have had a very important settlement at Caersws, a few miles distant; and recent excavations have revealed a wealth of interesting antiquarian relics. It is not my purpose, however, to deal with the romance of Gregynog so much as to describe its gardens, and I will resist the temptation to discuss the old Roman road, which Pennant was at much pains to trace through the estate.

One can only speculate as to what gardening was like in the time of the Prince of Powys, but the monarch Oak trees still exist on the estate which witnessed his onslaught on Ethelfred in defence of native possessions. The mansion is 660 feet above sea-level, the park of 500 or so acres falling away in westerly and south-easterly directions, with a cone capped with fine Scotch Firs standing another 150 feet to the south. Not only Scotch Firs, but nearly all Conifers, do remarkably well here; Silver Firs 80 feet to 90 feet or so high are plentiful. One of these in a group I measured, at 44 feet from the ground, has a girth of 9 feet 6 inches. But to return to the gardens. It must be noted that, notwithstanding elevations, a stiff, greasy soil, and a heavy rainfall, Lord Joicey, aided by the late Lady Joicey, and through the instrumentality of Mr. J. Jackson, an enthusiastic and skilful gardener, has succeeded in a few years in producing an original effect, highly artistic, and in complete harmony with the natural surroundings. The south front of the house looks out on the Pine hills, but a broad platform, part grass and part gravel, lies between. From the edge of this platform the ground falls abruptly to a long glen of varying width, issuing on the other side on the sloping hill. The glen is spanned by an ornamental bridge, which unites the two portions of the main drive through the park.

On the eastern side of the bridge the glen, 2½ acres in extent, is converted into what is primarily a Rose garden. The levelled ground contains three large star designs in sections, each of which comprises a single colour.

The steep bank towards the house is treated in a unique fashion, the effect from a distance being that of arched masonry, but produced by very solid planting of English Yew, representing pillars and archways. There are 26 archways in which are grown the best sorts of Tea and H. T. Roses. The larger spaces hold three to four dozen plants, and as each space has only one variety, the fine general effect may be imagined. In archways and beds there are altogether about 100 distinct varieties.

In addition, on the opposite sloping bank are Roses in many beds of varied designs; tree stumps, pillars, tripods, etc., are also clothed with the best Wichuraiana, polyantha, and other climbing Roses. The earth banks flanking the bridge are adorned with Dorothy Perkins and Hiawatha.

Higher on the hillside, a fine serpentine border, with masses of shrubs and herbaceous plants, forms an excellent background. Coloured foliage is effectively employed to provide brightness and life during the winter, and a variety of tone in summer. Hollies—Golden Queen, Golden King, and Waterer's Gold, in panels—Young's Golden Juniper, Cupressus Lawsoniana lutea, and other coloured evergreens; Japanese Maples and Prunus Pissardi are conspicuous in summer. Anthony Waterer Spiræa makes a great show in its season, and a mass of about 150 plants of Pink Pearl Rhododendron provides a feast of colour. Silver Osmanthus and Phillyrea decora grow extremely well.

The western side of the bridge, though just as effective, is widely different from the eastern side. Rhododendrons are planted largely on the hillside boundary, and panels of shrubs with bright foliage, such as Golden Privet, heighten the effect from the distance. Specimen Conifers such as Cupressus Lawsoniana erecta viridis, C. nootkatensis, Thuya Lobbii zebrina (a fine golden form), Cedrus atlantica glauca, and others, occupy positions in the lower ground, with bold beds of Azaleas—A. sinensis and A.

gandavensis, several hybrids intervening. Among the hybrids I noted a bed of A. Antony Koster, and another of A. J. C. Van Tol. Heaths are effectively used as a groundwork and border for these beds. Hydrangea paniculata grandiflora and Veronica Traversii are also planted in masses. Bamboos, which one would hardly expect to find here, grow well in several of the choicer varieties, such as Bambusa falcata, B. mitis, B. aurea, and B. nigra, each planted in a separate group. Mr. Jackson pointed out two subjects which have proved fine successes as ornamental hedges: Osmanthus ilicifolius and the Silver Variegated Box.

road, in the retaining wall of which every cranny is full of Asplenium trichomanes—a pleasing sight. By a flight of steps the formal garden leads down to a woodland, the steps being suitably flanked by trained specimen Yews with golden heads on green bases. Bold sweeps of well-kept lawns are here and there interrupted by groups of flowering shrubs in very flourishing condition. Pernettya mucronata, the larger growing Heaths, Erica lusitanica and E. mediterranea; Hydrangea paniculata grandiflora, and many other plants are represented. American plants thrive remarkably well, notwithstanding the unpromising clay soil. It is

A dingle at the extremity of the Douglas wood awaits Mr. Jackson's attention; a secluded stream is by and by to be converted into a small torrent, and Bamboos and Ferns are to add to its attractiveness.

The vineries, fortunately, have sufficient headroom to allow the canes ample length—about 30 feet. In adjoining houses Bellegarde and Royal George Peaches are doing well, and frames and plant-houses are fully occupied with successional batches of useful flowering plants and bulbs. There were considerable quantities of Carnations (Duchess of Westminster particularly good), Calanthe Veitchii, Zonal Pelargoniums,



Photograph by J. Owen.

FIG. 102.—GREGYNOG, MONTGOMERYSHIRE, SHOWING THE SOUTH FRONT.

Many fine old green Yews may be noted, particularly one whose branches sweep the lawn with a circumference of 50 yards. Within an avenue of fine Limes is a 7 fe t wide Rhododendron walk. Many of the best varieties are planted singly on either side. The walk extends for a great distance, and terminates in the woodland. Fountains and figures surrounded by beds, furnished in summer with tuberous Begonias, serve to break the even flatness of the long, front terrace. The usual summer bedding plants occupy the north-west front in the summer season. Herbaceous borders, well filled with the best varieties, overhang a service

pleasant to recall the displays of Rhododendrons, Azaleas, Ledums, Skimmias, Andromedas, Ericas, and Pernettyas. Throughout the gardens the formal and the natural are happily blended; from a set of even lawn beds the eye is carried to a chain-and pillar arrangement of Clematis and Roses, then to a long series of Golden Standard Hollies, or fine Conifers, on to a background of Abies Douglasii, which occupies a steep hill side overlooking the lower gardens. The trees are making prodigious growth, and need very judicious treatment if a satisfactory result, either scenic or arboricultural, is to be secured. The glaucous form is also prominent

Primulas and Winter Begonias. The Gloire de Lorraine Begonias were excellent plants, also the varieties President Carnot, Turnford Hall, Gloire de Cincinnati, Agatha (a dwarf form, good for table decoration), and Patrie, a distinct coral pink, with more erect spikes than the type. Many of these were 12 to 18 inches high, and very bushy—yet only in 60 size pots. In this form they are most serviceable, and seed very freely. A clean stock of finely grown stove plants, some Orchids, batches of healthy Eucharis grandiflora, and many other useful plants were noted [illegible] me to add more than a final word of congratulation on the care and skill whereby such admirable results are [illegible]

The Week's Work.

FRUITS UNDER GLASS.

By JAMES WHYTOCK, Gardener to the Duke of BUCCLEUCH Dalkeith Palace, Midlothian.

PINEAPPLES.—Pines of such varieties as Smooth Cayenne and Charlotte Rothschild which have been growing actively during the winter, and are either swelling or ripening their fruits this month, should be watered extra carefully. Moisture may be withheld from plants with fruits that are coloured or approaching ripeness, but fruits that are swelling should be afforded water in which a small quantity of guano is dissolved. Aim at keeping the soil moist, but not excessively wet. The most should be made of the sunheat, closing the houses early in the afternoon, and allowing the temperature to rise to 90°. Spray the plants lightly, avoiding heavy syringings, and sprinkle the paths and walls frequently. The temperature at night should be 70° to 75°, according to the weather. Queen Pines that were started early, and are showing fruit, should be watered frequently at the roots, but do not allow the soil to become too wet. Make the most of the sunheat, admitting sufficient air in the early part of the day to prevent the plants becoming drawn. Close the houses at three p.m., and allow the temperature to rise to 85° or 90°, with a night temperature of 70°. Damp the bare surfaces in the house to promote a moist atmosphere. Only two suckers should be left on each plant; all the others and "gills" on the fruit-stems should be removed. Succession Pines that were potted finally in March, and have received no water at the roots since that time, will require to be watered. Afford air early in the day in bright weather, closing the houses early in the afternoon, when the temperature should be 80° to 85°. The temperature at night should be 65°. Spray the plants lightly. Those plants which were not sufficiently rooted for potting in March should be attended to in this matter now.

VINES.—The earliest vines with bunches colouring and ripening, should be grown in a cooler and drier atmosphere than earlier in the season, admitting a little air at night. Vines fruiting in pots that have been plunged will require only a little water at the roots, although care must be taken to keep the soil moderately moist. At this stage red spider is apt to be troublesome, and if this is the case, sponge the leaves with an insecticide directly the pest is detected. Maintain a night temperature of 60°, affording air during the day, according to the weather, but preventing cold draughts. In early succession vineries, where the grapes have been thinned, growth may be hastened by promoting a warmer atmosphere, the night temperature ranging from 65° to 70°. Air the vinery early in the day, and increase the amount of ventilation as the sun gains power, closing the houses in the afternoon, when the temperature is 80° or 85°, at the same time sprinkling the bare surfaces to maintain a moist atmosphere, except when the weather is cold and sunless. The watering of inside borders should be attended to, and, if the Vines have borne full crops for a number of years, manure water may be given freely, but if the Vines are young and growing vigorously in a comparatively fresh, porous border, this stimulant is better withheld. In all cases Vine borders should be tested before affording water; borders that are too dry, or too wet, are equally injurious to successful cultivation. Examine the Vines frequently, removing all lateral growths. Guard against insect pests. Succession Vines of Black Hamburgh and Foster's Seedling swell their berries very quickly, and the bunches should be thinned at once. All shoots should be secured in their proper places, and superfluous laterals removed. Assuming that the Vines are growing well, and the border is in a proper condition, the present is a suitable time to afford manure-water to the roots. Late vineries should be started. If the inside borders have been kept dry, they should be well watered, but the surface of the border should be previously sprinkled with Vine manure and pricked over lightly with a fork. Syringe the Vines twice daily in bright weather, and damp the paths and bare surfaces. A little fire heat will be required at night to maintain a temperature of 50° until the buds commence to break.

THE FLOWER GARDEN.

By EDWARD HARRISS, Gardener to Lady WANTAGE, Lockinge, Berkshire.

VIOLETS.—The past winter has been most favourable for the culture of Violets in frames, as it has been possible to give them an abundance of air nearly the whole season. If plants are now in flower out-of-doors those growing in frames may be dispensed with, as the frames will be useful for other subjects. Attention should be given to the young plants which were rooted in cold frames last autumn. If the ground is ready they may be planted out at about the middle of the month. A border facing east or north is the best situation for Violets during the summer, as in hot, dry situations the plants are attacked by red spider, which is often the cause of failure. The ground having been dug some weeks ago, and a liberal quantity of well-rotted cow-dung incorporated with the soil, it should be lightly forked over, and the surface afterwards made level with the rake. The single varieties, of which Princess of Wales is perhaps the best, may be planted at about one foot apart, and the double varieties a little closer. Another method of propagation is to divide the old plants and reset the most promising crowns. But young plants are undoubtedly the best, especially for ground which is not naturally suited for Violet culture. Make the plants firm in the ground, and, for the first few weeks afterwards, attend to their watering regularly. In warm, dry weather spray the foliage, using a syringe or a fine-rose can. A light dusting of soot applied occasionally will act as a stimulant, and will help to keep the plants free from red spider.

PANSIES.—It is not too late to sow Pansy seed to raise plants for blooming in the autumn. Sow the seeds in pans and place them in a warm house until the seedlings are through the soil, when they should be inured gradually to cooler conditions. Transplant the seedlings in boxes, or in a bed of soil in a cold frame. Varieties that are worth perpetuating may be propagated from cuttings, or division of the old plants. Many of the shoots are already furnished with roots, and the shoots should be inserted with the latter intact. The plants may be set out in a shady position out-of-doors.

SWEET PEAS.—Plants which have been raised in pots for planting in tubs should be supported with small twigs before they get damaged. When they are fairly well rooted they should be planted. Let the tubs be filled with good soil and make it fairly firm by ramming. A compost consisting of chopped loam and well-decayed manure, with a sprinkling of bone meal, will be suitable. When finally staking the plants choose stakes of moderate strength, and do not place too many in each tub or they will appear unsightly. Some of the growths may be supported with neat ties of green string. Place the tubs in an open situation so that the plants may grow sturdily. Sweet Peas in pots or boxes intended for growing in the open should be planted before they become pot-bound. Stake them directly they are planted, and, should birds be troublesome, protect them with strands of black cotton. A sowing of Sweet Peas may be made out-of-doors for successional blooming.

GLADIOLUS.—Corms of Gladiolus intended for planting in beds which are at present filled with spring-flowering plants should either be planted in boxes or potted singly in small pots, in order that they may make a start before the beds are ready to receive them. See that each variety is correctly labelled, and place the pots in a cold frame. Gladiolus corms may now be planted in the mixed border or vacant flower-beds; groups of the Brenchleyensis type are very effective in the mixed border. As Gladioli are almost sure to fail on poor soil during times of hot, dry weather, they should be planted in deeply-cultivated and well-manured ground. A mulch of short dung is very beneficial during dry weather.

THE ORCHID HOUSES.

By W. H. WHITE, Grower to Sir TREVOR LAWRENCE, Bart., Burford, Dorking.

SHADING AND VENTILATING.—The weather of April is usually very changeable, bursts of sunshine alternating with cold showers, so that it is a difficult matter to maintain regular temperatures in glass-houses; but careful attention to such details as shading, ventilating, heating, damping bare spaces and spraying overhead, will prevent very serious fluctuations. The hottest or East Indian house will need the greatest care in these matters, because many of the plants, including seedlings, are growing fast, and will suffer injury if they receive a check. Little ventilation will be required in this house at present, except, perhaps, during a few hours in the middle of the day, when the atmosphere of the house is comparatively dry. On sunny days, when the lower ventilators are open, reduce the amount of air directly the sun becomes obscured by clouds, and if necessary close the ventilators entirely. If the roof-glass is thinly stippled there will be little need to use the blinds at every trifling change in the weather. At this time of the year, especially when the glass is not stippled, the young growth and foliage is exposed to considerable injury during times of bright sunshine. I have known Orchids, both in these gardens and elsewhere, to be disfigured and retain the injury for years through exposure for only a short time to the full glare of a spring day's sun. During the summer, probably owing to a freer use of the ventilators and more regular shading at that season, there is not so much danger in this respect, while during the autumn many plants, particularly Dendrobiums, Cattleyas, Lælias and Calanthes are greatly benefited by a considerable amount of direct sunshine. The blinds of the Cattleya house should be lowered whenever the temperature reaches 80° to 90° by sun heat, or, where the glass is clear, whenever the leaves of the plant begin to feel warm to the hand. They should be pulled up again at least half an hour before the sun ceases to shine on the roof. The Mexican house, where such plants as Lælia anceps and L. autumnalis are grown, will only need shading during the warmer part of the day. Both divisions should be ventilated freely whenever it is possible to admit air without unduly reducing the temperature. The bottom ventilators should be partially open when the external air is above 40°, and wide open when 50°, provided the inside temperature can be maintained between 65° and 75° by fire heat. In lofty houses, where the roof ventilators are some distance from the plants, fresh air may be admitted when the outside air is calm and mild. As regards the intermediate and cool houses, the blinds should be let down immediately the sun raises the temperature to above 60°, and they should be kept down for so long as the sun shines upon the roof. In admitting air to these cool houses the bottom ventilators should be more or less always open, maintaining a temperature of 50° by fire heat when necessary. When the outside temperature is about 50°, and the weather calm and damp, the top ventilators should be used freely, and, in sheltered situations, the outer doors may be opened also. Odontoglossums should receive plenty of fresh air at all times, but discretion must be used in the matter. At Burford I find it advantageous in many ways to have the roof-glass of nearly all the houses stippled outside. For all the warmer houses we use a mixture of white lead and paraffin, adding a little clear varnish to make it adhere firmly to the glass. The stippling should be done whilst the sun is shining full upon the glass, so that the mixture may dry as quickly as possible. Clean the glass thoroughly, and see that no dirt is present where the sheets overlap, otherwise the mixture will block up the spaces and make the roof airtight. Put the stippling mixture on these warmer houses as thinly as possible, and by the middle of the summer a considerable portion of it will have been washed off, thereby gradually accustoming the plants to more light and sunshine. The stippling is done more thickly in the case of the cooler houses, and a mixture of flour and water is used, this being more suitable for the plants, as the surface of the glass remains cooler than when the other substances are used. Choose a fine bright day for stippling the cool houses, and remove the plants, so that the sun

can effectually dry the coating firm and hard. Do not attempt to carry out the work in dull, showery weather.

PLANTS UNDER GLASS.

By F. Jennings, Gardener to the Duke of Devonshire, Chatsworth, Derbyshire.

Begonia Gloire de Sceaux.—If large specimens of this Begonia are required some of the more promising of last year's plants should be repotted. The great essential of success is to keep the plants thoroughly free from the small yellow thrip, which is so detrimental to them. The first indication of the presence of this pest (which is practically invisible to the naked eye) is a slight deformity of the young leaf as it opens. As soon as the leaf injury is detected fumigate the plants with nicotine compound at as great a strength as is possible without injuring the plants, and repeat the fumigation about the third day; the fumigations may be continued at least once every fortnight. Pot the old plants in a mixture of rich loam and leaf-mould in equal parts with coarse sand, wood ashes, peat, fine bones and a little dried sheep or cow-manure added. Grow the plants in a stove temperature always, and shade them from direct sunshine during the summer months. Cuttings of this Begonia, also of the Gloire de Lorraine varieties, may be inserted. Select shoots from the base of the plant, and strike them in sand with bottom heat, covering them with a bell-glass or propagating frame. Should very large specimens of these Begonias be required, repot some of the old plants and grow them in a stove temperature and a close, moist atmosphere. Fumigate the plants as advised above.

Cytisus racemosus.—As this plant passes out of flower, the shoots should be pruned moderately, provided large specimens are not required. Place the plants in a warm Peach house or Vinery having a night temperature of 50° to 60°, and well syringe them. When they have made sufficient growth harden them off preparatory to placing them in a cool house. If desired they may be grown out-of-doors during the summer. Cytisus and Genista may be increased easily, either from seeds or cuttings taken from plants that have been started as advised. Insert the cuttings in pots filled with suitable soil, and strike them under a bell-glass in an intermediate house. Shade the cuttings from the sun until they are rooted, when they should be hardened gradually.

Insect Pests.—As the season advances insect pests will become increasingly troublesome in the glass-houses unless means are taken to destroy them. The majority of indoor plants may be fumigated or syringed with insecticides, but very tender subjects, such as Ferns, are liable to injury from the fumes of nicotine, which causes the young foliage to shrivel. But if the fronds are not too young Ferns may be fumigated mildly, using tobacco paper. After fumigating Ferns be careful to keep them shaded from direct sunshine. Guard also against weevils and slugs injuring the plants.

THE HARDY FRUIT GARDEN.

By B. Goodacre, Gardener to Sir Ernest Cassel, Moulton Paddocks, Newmarket.

Strawberries.—If the beds have not yet been mulched with long straw or loose litter, this should be done at once. It is a mistake to delay this work, as is often done, until the flowering season is at hand, for the young flower spike is easily damaged, and the least injury will greatly interfere with the even swelling of the fruits. Again, if litter from a stable or farmyard is employed, this being spread along the rows now, the rains will thoroughly cleanse and soften the straw long before the fruit is ripe. Dryness at the roots is often the chief cause of the failure in the Strawberry crop, and a mulch of litter will do much to keep a greater amount of moisture in the soil. The Strawberry is a gross-feeding plant, and should be fed regularly with stimulants. If obtainable, liquid manure is very beneficial to the plants from now onwards until the flowers have formed. Failing this stimulant, one of the many artificial manures on the market should be used. These are best dusted along the rows, but they should be kept as much as possible from the foliage. The soil should afterwards be forked very lightly and watered thoroughly. If slugs are troublesome give the rows a good dusting with slaked lime or soot. The Strawberry is a surface-rooting plant, and care must be taken to disturb the roots as little as possible; for this reason a spade should never be used in the Strawberry beds. Fresh plantations may be made by planting runners on land that has been prepared in advance. These plants should not be allowed to fruit this season; therefore the flower-spikes should be removed as soon as they appear. This is the best time of the year for planting Alpine Strawberries that fruit in the late summer and autumn. The improved type of this Strawberry is becoming a great favourite in nearly all gardens. During favourable seasons a small plantation will furnish a dish of berries every day from July until late October. The plants crop best in their first season, and seedlings give the best results. Seedlings throw up a much stronger spike, which rises clear above the foliage, whilst plants from runners generally form bunches of weak flower-spikes that produce small and inferior fruits. Set the plants in rows at a foot apart, allowing a distance of 18 inches between the rows. Alpine Strawberries grow best in rather moist soils and partially shaded situations.

THE KITCHEN GARDEN.

By John Dunn, Foreman, Royal Gardens, Windsor.

Seakale.—The "thongs" or portions of roots intended for furnishing next season's crop should be taken from their temporary quarters in the ground and planted permanently with as little delay as possible. Provided the ground was trenched and manured in winter, the soil will need little attention beyond forking the surface and breaking the particles as fine as possible. The soil for this crop should be of a rich nature and of open texture, not only to favour the growth of this season's crowns, but also the young roots which will furnish the stock for another year. When the young plants are ready they should be planted in rows 2 feet apart, allowing a distance of one foot from plant to plant in the row. They may be set with an ordinary dibber, covering the crowns with 2 inches of soil. We intend to plant about 20,000 sets of Seakale at Frogmore during the next ten days in this manner.

Spinach.—Seeds of Spinach should be sown frequently to ensure an unbroken supply throughout the summer. As the season advances choose a cool situation for this crop. If a sowing of New Zealand Spinach is made now, the plants will provide an excellent substitute for ordinary Spinach in hot, dry weather. The warmer the weather the better this plant seems to thrive. If sown in rows made at 2 feet apart on good, rich soil its spreading branches will soon cover the ground and afford large quantities of rich green leaves throughout the summer.

Peas.—Make a liberal sowing of Peas to furnish supplies about the end of June and the beginning of July, selecting suitable varieties, as this is an important detail. They may include Gradus, Matchless Marrow, and Royal Salute, and if these three varieties are sown on the same day the pods will not be ready at the same time, so that a succession will be assured. They are all first-class varieties, and others are Superlative and Alderman. The last-named should be grown not closer than 6 feet apart between the rows, but in the case of the other varieties 5 feet will suffice. At Frogmore we sow Peas for successional cropping as soon as those of the previous sowing are well through the ground, thus ensuring a continual supply from May onwards until frosts destroy the plants in the autumn. Our last sowing is made about the middle of June. Main-crop Peas should be sown in an open situation in ground that has been specially trenched and manured for the crop during the winter.

Onions.—Stir the soil lightly between rows of autumn-grown Onions, and give a light sprinkling of artificial manure to forward the growth of the bulbs to have them ready for use as early in the season as possible. Stir the soil between the rows of Spring Onions with the Dutch hoe as soon as the plants are large enough to permit of the work being done, but do not disturb the soil too deeply, as Onions succeed best in firm ground. Thin the plants as soon as they are large enough to handle but, unless large bulbs are required for any special purpose, do not thin them severely. Onions raised in boxes should be ready for planting out-of-doors during the third week in April. Let the transplanting be done with extra care, and especially guard against breaking the roots when lifting the plants from the boxes. For this reason it is best to use a small trowel, so as to retain as much soil about the roots as possible. Plant them in ground that has been specially prepared for them, and, if the weather proves dry directly after the planting is finished, sprinkle them with rain water twice daily, and continue to do this until they are well established.

THE "FRENCH" GARDEN.

By Paul Aquatias.

Hot Beds.—Afford ample ventilation to Carrots and Turnips; during warm and calm days the lights may be removed altogether until 4 or 5 p.m. When the glass is thus out of the way a watering with the hose may be given if moisture is needed. The luxuriant growth of the Cauliflowers will necessitate the lifting of the frames some 2 or 3 inches by placing long straw under each corner.

Crops under Cloches.—The Cabbage Lettuces have been marketed. It is the practice of some growers to set a Cauliflower under each cloche on the outside rows, and these should be well established when the Cos Lettuces are mature, but this method can scarcely be recommended if Carrots were sown when the beds were formed. Shading must not be neglected as the Cos Lettuces are forming their heads. If limewash is used, it should only be applied on the south side of the cloches.

Open-air Crops.—The planting of the different crops raised last month should be completed. Make another sowing of Spinach and Radishes for a succession to those raised a few weeks ago, and continue to make small but frequent sowings. Half a pound of seed of each vegetable sown fortnightly will be found sufficient for a garden of two acres. Spring Cabbages require another hoeing and an occasional watering with the hose. The final quarters for the Vegetable Marrows raised from seeds sown in February should be prepared by opening a trench 12 inches by 12 inches. After filling the trench with good manure, cover with soil and set a cloche at every two feet. Within 8 or 10 days plant one Marrow under each bell glass and afford shade until the roots are well established in the soil.

Nursery Beds.—Celery raised from seeds sown in February are ready for pricking out, preferably on a spent manure bed either in frames (750 plants per frame) or under cloches (30 per cloche). The second transplanting of the Tomatos should be completed as early as possible. Afford shade for a few days, and afterwards ventilate the frames freely. An early sowing of Kidney Bean, "Nigra" or "Canadian Wonder," should be made in 4 inch pots. Place the pots closely together in a cold frame, and cover the lights with mats at night. This batch is intended for planting in the open ground late in May to crop in advance of those sown outside. An earlier crop could be obtained if frames were available. In this case the plants are set on deeply-dug ground and covered with lights. After a week or ten days, when the soil is warmer, three rows of Beans are planted in each frame, allowing a space of 4 inches between the seeds. The lights will be kept closed, and covered at night till the weather is more genial.

Unheated Frames.—Vegetation is very luxuriant in the frames without hot-beds, and the watering and ventilation of the crops must receive careful attention. Keep the ground free from weeds and remove the Radishes as soon as possible. If Cos Lettuces and Cabbage Lettuce "Passion" are grown, the lights should be removed during the day time to promote a sturdy growth and good heads. In a few weeks the weather will be too warm for these varieties to be grown successfully unde

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* EDITORS, 41, Wellington Street, Covent Garden, London. *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

Special Notice to Correspondents.—*The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

Illustrations.—*The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable plants, flowers, trees, &c., but they cannot be responsible for loss or injury.*

Newspapers.—*Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, APRIL 14—
United Hort. Ben. and Prov. Soc. Ann. meet.

TUESDAY, APRIL 15—
Roy. Hort. Soc. Coms. meet. Daffodil Sh. (2 days). (Lecture by Rev. Prof. G. Henslow on "The Origin of Life—why it is undiscoverable.")

WEDNESDAY, APRIL 16—
R.H.S. Bulb Sh. and Primula Conference. Roy. Hort. Soc. of Ireland Spring Fl. Sh. (2 days). Co. Clare Hort. Soc. Spring Sh. Roy. Meteorological Soc. meet.

THURSDAY, APRIL 17—
Ipswich Fl. Sh. Linnean Soc. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich—46.9.

ACTUAL TEMPERATURES:—
LONDON.—*Wednesday, April 9* (6 P.M.). Max. 47° Min. 40°.
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—*Thursday, April 10* (10 a.m.): Bar. 29.7. Temp. 50°.
Weather—Overcast.
PROVINCES.—*Wednesday, April 9.*—Max. 48° Donegal; Min. 46° Sheffield.

SALES FOR THE ENSUING WEEK.

MONDAY NEXT—
Hardy Bulbs and Roots at 12; Roses and Fruit Trees at 1.30. At 67 and 68, Cheapside, E.C., by Protheroe and Morris.

MONDAY AND WEDNESDAY NEXT—
Liliums, Begonias, Gloxinias, Roses, etc. At Stevens's Auction Rooms, King Street, Covent Garden.

WEDNESDAY NEXT—
Palms, Bay Trees, and Azaleas. At Stevens's Auction Rooms, King Street, Covent Garden.
Herbaceous Plants and Hardy Bulbs at 12; Trade Sale, Liliums, etc. at 12; Roses at 1.30; Palms and Plants at 5. At 67 and 68, Cheapside, E.C., by Protheroe and Morris.

FRIDAY NEXT—
An importation of Cattleya aurea and new Orchids, also established Orchids. At 67 and 68, Cheapside, E.C., by Protheroe and Morris, at 12.45.

Plants Which Never Grow Up.

It might be supposed that Peter Pan is a symbol of human life only; that only among men and women are to be found examples of these delightful and sometimes provoking individuals who, possessing the secret of perpetual youth, never grow up. The supposition is unfounded, and indeed there occur among animals and plants not a few examples of permanent juveniles. Others there are among plants that invert the performance of Whiskerandos—who took "such an unconscionable time dying" —and proceed on the route which leads from youth to maturity at the most leisurely pace imaginable. This fascinating subject has served Mr. Cockayne as the text of an interesting address delivered before the biological section of the Australasian Association for the Advancement of Science.

The rebellion against advancing years is not unknown to us; but the refusal of many plants to grow into the proper adult pattern is only exemplified among humans by the ever-increasing length of time which elapses now before youth consents to become independent and mature. This parallel, however, holds only for some juveniles among plants. For example, the whipcord Veronicas with cupressoid growth-forms may retain their juvenile state for long periods, especially if they are cultivated in moist air and feeble light. Other Veronicas of this type hold yet more steadfastly to the gift and quality of youth. Thus a distinct species, Veronica cassinioides, is, according to Mr. Cockayne, a permanent juvenile, which, though it never grows up, produces flowers like an adult. This case is the more interesting in that its parents are dead. It persists as an example of a plant paradox—a mature juvenile form of an unknown and extinct adult.

The phenomena are so pleasing that we scarcely like to have them explained; but explained they must be, or science cannot sleep. It appears that the juvenile form of many New Zealand shrubs and trees is better fitted to existence in a dry climate than are the more leafy adults. Such is not evidently the case with the Veronica just described, but it is the case with considerable numbers of New Zealand plants—for example, shrubby species belonging to such families as Pittosporaceæ, Rutaceæ, Rhamnaceæ, Violacæ, Araliaceæ, Compositæ, and many others. It is also true of tree forms, for examples, Hoheria angustifolia, H. sexstylosa, Plagianthus betulinus (Malvaceæ) and Sophora microphylla (Leguminoseæ). In their juvenile stages plants of this type possess a well-marked system of divaricating branches which stand out at right angles with one another, and give a stiff, twiggy habit to the shrubs.

Of this type Sophora microphylla occurs in both juvenile and adult form. The latter, like the variety prostrata, does not form a tree of the typical tree-form. Though the variety retains its juvenile form it flowers and comes true to seed. It combines at once all the advantages of youth and age.

Sophora prostrata is no less interesting. In some stations shrubbery juveniles and tree adults grow side by side; but in other dryer regions the former only occurs.

Pittosporum divaricatum, and to some extent Corokia Cotoneaster (Cornaceæ), remain juvenile in the shady forest. Herbs seem less able than shrubs and trees to "stand pat" in the form most suited to their environment, but Mr. Cockayne cites the case of the mountain Lily, Ranunculus Lyallii, distinguished by its peltate leaves. It has reniform seedling leaves, and occasionally adult flowering plants are met with from which the adult form of leaf is absent or in which both juvenile and mature forms of leaf are present. To those who live in this country the cognate phenomena presented by the Retinosporas and by Holly, Ivy, and water Polygonum will occur. They will not, however, see so clearly in these plants as in those of New Zealand the signs of the interplay of circumstance and fate—fate driving them on to repeat the life-story of their ancestors, and circumstances calling upon them to halt and to remain as they are.

Cold Storage of Apples and Peaches.

In the course of a report on the occasion of the second Cold Storage Conference, held at Toulouse in September of last year, Mr. Barat pointed out the many uses to which cold storage may be put. Among others he mentioned the retarding of bulbs and rhizomes, such as Lily-of-the-Valley, Lilies and Gladioli. The value of the practice is indicated by the fact that bulbs from cold storage often sell for double the price obtained by non-stored bulbs. Even so long a period of cold storage as a year appears to produce no ill effects. More curious is the fact that cold storage has been pressed into the service of the hybridist. In order to effect a cross between two varieties of Carnation, the flowering periods of which are separated by about 30 days, the hybridists collected the pollen of the earlier variety and cold-stored it till the later variety was in flower. The cold-stored pollen retained its vitality and was used with success in the operation of crossing.

The temperature of the cold-storage room requires to be watched in order to maintain it constantly at + 1° C. The humidity of the air is kept at 80.

Those who have used it affirm that cold-storage is susceptible of yet wider applications in horticulture. Cut flowers put into refrigerators for 24 to 48 hours last longer and travel better than those which are not subjected to the treatment. In the case of flowers and also "primeurs," the best temperature is + 2° C., and the proper degree of humidity is 85.

With respect to fruits, Mr. G. Bouvier has shown that Apples maintain their freshness for 6 or 8 months, and certain varieties of Peaches withstand the treatment remarkably well—the more sappy sorts are those which are best adapted for cold-storage. In illustration of the commercial advantage attendant on cold-storage, the report mentions that in 1911 Peaches were stored some for 3 to 5 days, and some for 18 to 24 days. The former brought in 30-40 francs per 100 kilograms, the latter 80 francs. In packing refrigerated horticultural produce, it is important to allow of a circulation of air, and that the fruits themselves and the packing materials should be sterilised.

SIR TREVOR LAWRENCE.—In our remarks last week we inadvertently stated that Sir TREVOR LAWRENCE was a son of Sir JAMES LAWRENCE, whereas he is the only son of Sir WILLIAM LAWRENCE, who was Serjeant-Surgeon to Queen Victoria, a celebrated surgeon of his time, a pupil of Abernethy, a F.R.S., etc., etc., and a corresponding member of the Institute of France.

PRIMULA CONFERENCE. — A Primula conference will be held, under the auspices of the Royal Horticultural Society, in the society's hall, Vincent Square, Westminster, on Wednesday next, the 16th inst. The chair will be occupied by Sir JOHN LLEWELYN,

rt. The Conference will open at 11 o'clock, d will close at about 4 p.m., with an hour for ncheon at 1 p.m., which will be served in the nmittee-room. The following papers will be ven :—Morning Session : (1) European Primu-, by Dr. JOHN MCWATT; (2) European ybrids in Nature, by Mr. REGINALD FARRER; Himalayan Primulas, by Mr. W. W. CRAIB. fternoon Session; (4) Chinese Species of Pri-ula, by Professor BAYLEY BALFOUR, F.R.S.,; Primulas from a Garden Point of View, by iss GERTRUDE JEKYLL.

ROYAL HORTICULTURAL SOCIETY.—A special affodil Show will be held in conjunction with e next fortnightly meeting of the Committees the 15th inst. in the Vincent Square Hall, estminster. The exhibition will remain open r two days. At 3 o'clock on Tuesday the Rev. rofessor G. HENSLOW, M.A., will deliver a lec-re on "The Origin of Life—Why it is Undis-verable."

BOARD OF AGRICULTURE APPOINTMENTS.—he post of General Inspector of Horticulture nder the Board of Agriculture and Fisheries as been filled by the appointment of Mr. G. P. ERRY. Mr. Runciman, in answer to a question ddressed to him on the subject in the House f Commons, replied as follows:—"I have ap-ointed Mr. G. P. BERRY to be the General nspector in the Horticultural Branch of the oard. Mr. BERRY, who has been engaged in lorticulture from his early youth, holds the iploma in horticulture of the Royal Botanic ardens, Edinburgh, and certificates of the leriot-Watt College in horticultural physics, and or several years past has been head of the horti-ultural department of the Edinburgh and East f Scotland College of Agriculture. He has large xperience of commercial fruit-growing and narket gardening, and has kept himself in touch vith the developments in this industry in all arts of the country." Three Assistant Inspectors ave also been appointed, the successful candi-ates being Messrs. R. H. LOCK, Sc.D., F.L.S., . SNELL, B.Sc., and H. V. TAYLOR, A.R.C.S., .C.S. Dr. LOCK, who was a Fellow of Gonville nd Caius College, Cambridge, from 1904 to 1910, eld the posts of Scientific Adviser to the Director of the Royal Botanic Gardens, Ceylon, rom 1902 to 1904, Curator of the Cambridge Uni-ersity Herbarium, 1905-1907, and Assistant-Director of the Botanic Gardens, Ceylon, 1908-912. He also acted as Director for seventeen nonths and as Mycologist for nine months. He edited the *Tropical Agriculturist* for a time, and for a period of five years supervised the Agri-cultural Experiment Station in Ceylon. He has lso published numerous papers on plant-breeding nd tropical agriculture. He has recently written book entitled "Recent Progress in the Study of Variation, Heredity, and Evolution." Mr. SNELL took the degree of B.Sc. at London Uni-ersity in 1909, and has recently acted as Lecturer on Botany at the Birkbeck College and Demonstrator in Histology at the Middlesex Hospital. He has also been engaged in research work on plant cytology. Mr. TAYLOR was edu-cated at the Royal College of Science, South Kensington, where he took his degree. At the time of his appointment he held a scholarship at the College, awarded for the purpose of study-ing plant diseases. The chief duties of the Dis trict Inspectors of the Horticultural Branch are the investigation of plant diseases and the ad-ministration of the Destructive Insects and Pests Acts. Both Mr. SNELL and Mr. TAYLOR are the sons of farmers in the south-west of England.

CLOSED HOUSES AT KEW.—A correspondent complains that since the recent outrages oc-curred at the Royal Gardens, Kew, several of the principal plant-houses have been inaccessible to the public, and the doors still remain closed. It is admitted that the authorities are bound to take necessary measures for preserving the houses and plants from wilful damage, but it is hoped that they will find some means of doing this without closing the houses to public inspection. Would not the appointment of a few extra watch-men suffice for the purpose?

MIDLAND REAFFORESTING ASSOCIATION.—The annual general meeting of the Association will be held at the University, Edmund Street, Birmingham, on the 17th inst. The President, Sir OLIVER LODGE, D.Sc., F.R.S., will take the chair at 4.30 p.m.

BRITISH GARDENERS' ASSOCIATION.—A meet-ing of this association will be held at Dear's Hotel, London Road, St. Albans, on Wednesday, the 16th inst., at 8 p.m., with the object of forming a local branch of the society. The general secretary, Mr. CYRIL HARDING, will de-liver an address.

A. O. P. I.—We have received with pleasure the first number of the official journal of the Asso-ciation of Professional Horticulturists of Italy, which derives the at first sight mysterious name A. O. P. I. given above from the initial letters of the descriptive title, "Associazione Orticola Professionale Italiana." The review is to ap-pear monthly, and is edited by Dr. GUSTAVO VAGLIASINDI.

SCARCITY OF "SEED" POTATOS.—The *Field*, in a recent issue, gives the opinion of a large Potato grower in the Spalding district that more cut Potatos will be used as "sets" in 1913 than in any previous year. "Last year," he stated, "462,903 acres of Potatos were grown in this country, or 33,731 acres more than in 1911; yet the yield was thousands of tons less owing to blight. Hundreds of acres of Potatos in this district rotted in the fields, and quantities also went wrong in the pits. This means thousands of tons less for seed purposes, and the large tubers usually sent to the markets for eating pur-poses will have to be kept at home and planted." A significant commentary on this view is pro-vided by a report we have received from the Scottish Board of Agriculture, which states that the imports of Potatos to the United Kingdom for the week ending March 29 were 8,009 tons, as against 486 tons in 1912; and the exports 178 tons, as compared with 27,732 tons in 1912.

THE ENDOWMENT OF HORTICULTURE IN AMERICA.—Horticulturists in Great Britain watch with interest mingled with envy the recognition of horticulture which is evinced by foreign States. The latest example of the endowment of horticulture is provided by the State of New York, the Assembly of which, according to the *American Florist*, has passed a Bill providing for an appropriation of 60,000 dollars for experi-mental greenhouse purposes. Of this sum 36,000 dollars are to be devoted to floricultural work.

MUD-BINDING GRASS.—In our issue for Janu-ary 18, 1908, we published an article by Dr. OTTO STAPF on the subject of the properties of Spartina Townsendii, or Rice Grass, which is extensively grown on mud-flats in this country, to prevent erosion and consequent silting at river mouths. Dr. STAPF has recently given a lecture at Bournemouth on the subject of this grass. Experiments have lately been made in the Med-way, below Chatham, and have proved very successful in binding together the mud on the shore. The grass is useful not only as a binder, but as fodder for horses and cattle; it is also stated to form an excellent thatch.

"THE BOTANICAL MAGAZINE."—The issue for March contains illustrations and descriptions of the following plants :—

CYTISUS × DALLIMOREI, tab. 8482.—This hybrid Broom was raised at Kew Gardens from C. scoparius Andreana crossed with C. albus, and the first account of it was given by Mr. ROLFE in *Gardeners' Chronicle*, June 18, 1910, p. 397. The cross resulted in two seedlings, the one named after Mr. DALLIMORE having flowers of rosy-purple colour, whilst the other had yellow blooms tipped with rose. The original plant of C. Dallimorei made feeble growth, and it was only by grafting a shoot on a young Laburnum that the cross was perpetuated. Since then a stock has been raised by the same method of grafting. It is interesting to learn that the plants have produced seeds at Kew, and a number of seed-lings have been raised from them. Their flower-ing will be watched with interest.

MAGNOLIA SALICIFOLIA, tab. 8483 — This plant was figured in *Gardeners' Chronicle*, April 6, 1912, p. 223. The flowers most resemble those of M. stellata; both are pure white, but in M. salicifolia there is a distinct calyx and corolla, whereas in M. stellata all the perianth leaves are petaloid. It is stated that a specimen of this Magnolia at Kew promises to make an elegant tree, a rather unusual feature in the genus.

ALOE MARLOTHII, tab. 8484.—This plant is a native of South Africa, and specimens from the Transvaal flowered in cultivation for the first time in the Grahamstown Botanic Garden in July, 1908. The species has been confused with A. ferox, whilst it is apparently the same plant as the one described by Mr. BAKER as A. supralævis β Hanburii. The flower stalk is branched, and grows over 3 feet high; the hand-some yellow flowers are striped with green to-wards the top, the three outer segments having brown tips.

RUELLIA HARVEYANA, tab. 8485.—This new species was discovered by Mr. J. C. HARVEY in forests on the northern side of the Isthmus of Tehuantepec, in 1904. A specimen sent by Mr. HARVEY to Kew in 1911 flowered in August, 1912, and furnished the material for the *Botanical Magazine* plate. The flowers are not so hand-some as those of some species in cultivation; they are a very pale lilac colour, with a white throat and tube. The plants have succeeded at Kew in a warm house in which Begonias and Gesneriads are cultivated.

PRUNUS PENNSYLVANICA, tab 8486.—This species is an old plant in gardens, but although specimens were in cultivation as far back as 1773, it never appears to have been common in this country. The species is a native of North America, and closely related to P. emar-ginata. It is recommended as a suitable tree for planting in thin woodland, where P. Padus and P. avium succeed.

APPOINTMENTS FROM KEW.—*The Kew Bulletin* publishes particulars of the following appoint-ments :—Mr. WILLIAM SMALL, of the University of St. Andrews, has been appointed by the Sec-retary of State for the Colonies, on the recom-mendation of Kew, Botanist in the Agricultural Department of Uganda.—Mr. WALTER JOHN DOWSON, of the University of Cambridge, has been appointed Mycologist in the East Africa Protectorate.—Mr. LOUIS FREDERIC RUSE, a member of the gardening staff of the Royal Botanic Gardens, has been appointed a probationer gardener for service in India. —Mr. C. K. BANCROFT, Mycologist in the Federated Malay States, has been ap-pointed Assistant Director of the Department of Science and Agriculture and Government Botanist, British Guiana, in succession to Mr. F. A. Stockdale.—Mr. STEPHEN TROYTE DUNN, late Superintendent, Botanical and Forestry De-partment, Hong Kong, has been appointed by the President of the Board of Agriculture and Fisheries, Official Guide to the Royal Botanic Gardens, Kew, for one year from April 1 next. The appointment of a Guide has been approved by the Government as a temporary measure.

"RUCKSAC."—In Professor FARMER's review of Monsieur CORREVON's book, *The Alpine Flora*, on page 200 of our issue of March 29, the printer has made "rucksac" to read "rücksac" in error. This is a common mistake, and it origi-nated from the obvious, but false notion, that

the word implies a bag with straps to go round the arms, and hanging on the *back*; hence "back-bag." The source of "rucksac" (or rucksack), however, is really quite different. It is derived from the old word ruck, a jolt or jerk; rucksac means a sack in which the contents are jerked or jumbled together.

MAGNESIUM SALTS AND CHRYSANTHEMUMS.—It has been asserted more than once that salts of magnesium exercise a markedly beneficial effect on Chrysanthemums. The most recent experiments, however, seem to indicate that the addition of magnesium salts is without beneficial effects. Thus Mr. H. CREPIN finds that plants which received no magnesia gave just as good results as those which were provided with kainit—an artificial manure rich in magnesium salts. Sulphate of magnesia appears to produce a harmful effect, and although magnesium carbonate did no harm, neither did it do good. Hence it would seem that the amount of magnesium salts present in ordinary soils is sufficient for the nutrition of the plant, and that the addition to the soil of magnesium compounds is unnecessary.

EFFECT OF GRASS ON TREE GROWTH.—Interesting statistics on the retarding effect of grass on the growth of apples are given in the "Report on Field Experiments at the Harper Adams Agricultural College." Measurements made annually since 1906 show in the case of Cox's Orange an average growth in diameter in eight years of .14 inches in the case of trees grown in grass against .31 inches in that of trees grown in cultivated land. The difference is almost as great in Bramley's Seedling, a grass-grown tree making an average growth in girth of .23 inches, and a tree in cultivated land a growth of .47. Bismarck gave similar and yet more pronounced results. The fruit from the grass-grown trees, though of deeper colour, is much smaller than from the trees in cultivated land, the average yearly crops being :—

	Cox's Orange Pippin.	Bramley's Seedling.	Bismarck.
Trees on grass	1¼lb.	5lb.	6lb.
Trees on cultivated ground	20½	37½	31

The article is illustrated by photographs which show, among other particulars, the striking difference in the vast systems of trees grown under the two conditions.

PUBLICATIONS RECEIVED.—***Vegetable Growing Made Easy,*** by Owen Thomas and George Wythes, and ***The Cooking of Vegetables,*** by Mrs. Frances Keyzer (London: Country Life, Ltd.). Price 1s.—***Meteorological Notes and Remarks upon the Weather during the Year 1912 with its General Effects upon Vegetation,*** by James Whitton (Glasgow: Botanical Gardens, Glasgow).—***Proceedings of the Fifty-Eighth Annual Meeting of the Western New York Horticultural Society held at Rochester, N.Y.*** Secretary, Mr. John Hall, 204, Granite Building, Rochester, N.Y.—***Stem and Root Borer of Hevea Rubber.*** By E. Ernest Green. (Colombo: Department of Agriculture, Ceylon.)—***No Plant Disease,*** by Arnold Eiloart (London: C. W. Daniel, Ltd.). Price 1s.—***Knowledge.*** March. 42, Bloomsbury Square, London. Price 1s.—***The Journal of Agricultural Science.*** March. (Cambridge: University Press.) Price 5s. net.—***Twentieth Century Gardening,*** by John Weathers. (London: Simpkin, Marshall, Hamilton, Kent & Co., Ltd.). Price 1s. net.—***Commercial Gardening,*** edited by John Weathers, issued in four volumes. (London: The Gresham Publishing Company.) Price 9s. each vol. net.—***The Scientific Proceedings of the Royal Dublin Society.*** March. "On Pure Cultures of Phytophthora infestans de Bary, and the Development of Oospores," by George H. Pethybridge and Paul A. Murphy. Price 1s. 6d.; and "On the Rotting of Potato Tubers by a New Species of Phytophthora having a Method of Sexual Reproduction Hitherto Undescribed," by George H. Pethybridge. Price 2s. 6d. (Leinster House, Dublin: Royal Dublin Society.)

PLANT NOTE.

COLUMNEA GLABRA MAJOR.

THIS showy Gesneriaceous plant is a native of the mountainous districts of Costa Rica, where it was found by M. Carlos Wercklé, in whose honour that pretty climbing Dahlia-like plant, Hidalgoa Wercklei, was named. The Columnea, which succeeds perfectly in a warm greenhouse or intermediate temperature, forms a much-branched little bush, whose rather stout shoots are clothed with small ovate leaves, fairly thick in texture. The flowers, which are about 3 inches in length, are of an orange-scarlet colour. A singular feature is the great resemblance that they bear to the different forms of the Æschynanthus, indeed, the Columneas may be taken as South American representatives of this old-world genus. Most of the Æschynanthuses occur as epiphytes in the forests of South-Eastern Asia and the neighbouring islands, whilst the Columneas flourish in some of the Southern parts of the Western Hemisphere. Another species, C. magnifica, illustrated in *Gard. Chron.*, October 30, 1909, fig. 134, was introduced into commerce by M. Lemoine, of Nancy, in 1909. C. magnifica somewhat resembles C. glabra, but is altogether more downy. Another Columnea, C. gloriosa purpurea, which flowered at Kew last autumn, is a very striking plant, quite distinct from either of the preceding species. The plant was growing on the top of a Tree-Fern stem, and the pendulus shoots drooped for some distance. The regularly arranged leaves are very hoary, and of a purplish tinge. The flowers are remarkable for the large hooded upper segment, which almost hides the rest of the bloom. The colour is a pleasing shade of scarlet

As they are all epiphytes, the Columneas succeed best in a light, open compost, such as a mixture of fibrous peat, Sphagnum-moss, sand and charcoal. Ample drainage must be provided, as the roots need plenty of water at all times, and especially during the plant's season of active growth. The plant may be easily propagated from cuttings. Aërial roots often develop if the plant is grown in a very damp atmosphere. *W. T.*

PRIMULA FORTUNEI.

THE origin of this interesting plant is somewhat obscure, but it has been in cultivation for some fifty years, as it is figured by Moore in the *Floral Magazine*, 1890, x. 7, from a plant which flowered in the nursery of Messrs. G. Henderson and Son. Nothing is stated there as to its history, and no light has since been thrown on its origin. P. Fortunei is rare in gardens, and up to about eight years ago the only specimens known in cultivation belonged to the late Colonel Beddome, of Putney, who had grown the plant for many years, but did not state how he obtained his stock. In 1905 Colonel Beddome presented a plant to the Royal Gardens, Kew, and from this a stock has been obtained by division. The scarcity of this Primula may be due to its half-hardy nature, consequently it requires to be grown in a cold frame during the winter, and, as the period of blossoming is early in February, it needs the shelter of a cool house at that stage. In summer the plants thrive in a cool, shady place where they can obtain plenty of moisture. They should be grown in pots in a mixture of sandy loam and leaf-mould. Being a perennial, the crowns may be divided after flowering, thus offering a ready means of increasing the stock; seeds are seldom produced. The latter evidence points to its hybrid origin, its parents probably being P. denticulata and P. farinosa.

P. Fortunei (see fig. 103) has coarsely dentate leaves, with very little farina, and stems about 3 inches high, terminating in loose heads of flowers which suggest those of P. farinosa. The flowers are about half an inch in diameter, and bluish-lilac in colour, with a primrose-yellow eye. Flowering early in the year, it is a useful subject for the Alpine house, and the blooms last fresh for a considerable period. *W. I.*



Photograph by W. Irving

FIG. 103.—PRIMULA FORTUNEI: FLOWERS BLUISH-LILAC WITH PRIMROSE-YELLOW EYE.

BULB GARDEN.

POETAZ NARCISSI.

Narcissi are just now the most prominent subjects at exhibitions, and each season a number of the new varieties are shown at the R.H.S. meetings and in the provinces. Many of them are extremely beautiful in colour, form, and size, and somewhat overshadow the older varieties—as, for instance, those of the Poetaz section. Some years ago I was persuaded by Mr. Robert Sydenham to try a few of these latter. I must plead guilty to a distaste for one of the varieties in this section—the Polyanthus Narcissus—but I found the others much more pleasing, and each year they seem more and more useful, especially as pot plants. Certainly they have not the size and colouring of some of the hybrids of the Poeticus, Incomparabilis and Barrii type; but they are greatly in advance of the old Polyanthus varieties, the large number of blooms on each stem making them particularly suitable for decoration. They are perhaps at their best mixed with Trumpet Daffodils. Their chief value, however, lies in their lasting qualities; I think I may say that the blooms remain fresh longer than those of any other Narcissus; and they have a certain rigidity of growth and habit which makes them excellent subjects for pot plants. I have found Alsace and Elvira the best of those varieties having a white perianth, and Klondyke amongst the yellows. *Thomas Stevenson.*

FORESTRY.

TIMBER OF THE LEBANON CEDAR.

Though the Lebanon Cedar (Cedrus Libani) was introduced about two and a half centuries ago, and has attained to a large size in this country, many trees containing upwards of 200 cubic feet of wood, yet the timber, speaking generally, has in my opinion hardly received the attention that its merits entitle it to. Thirty-five years ago a large specimen in Holwood Park, Kent, that had been planted by the great statesman, William Pitt, was uprooted by the wind and the timber converted into boarding, the intention being to utilise it in the making of furniture and for indoor work generally. More planks, however, were cut out of the tree than were required for the purpose named, the surplus being utilised in the making of a large tank for sheep-dipping. The position in which the timber was placed was one of the most trying, for, being sunk in the soil for about half its depth, and only filled with water during the sheep-shearing season, the vicissitudes of drought and damp were very considerable and well fitted to test the quality of the wood. The trough was 12 feet long by 4 feet wide, and the boards 2 inches thick and about 2 feet wide.

Quite lately I had an opportunity of examining the converted timber, both as furniture indoors and in the tank referred to as exposed to all changes of weather. The durability in the latter case was most remarkable, even when the thickness of the boards was taken into account; while in the case of the furniture but little difference could be detected after a lapse of thirty-three years.

The Lebanon Cedar produces timber rapidly; the exact measurements of two specimens on a Kentish estate, where the soil is not of extra quality, being 153 cubic feet in 99 years and 231 cubic feet in 130 years. This gives as near as possible an average annual timber production of 1.6 cubic feet; but as both these trees were growing on a rather poor, gravelly loam, incumbent on chalk, the rate of growth may be considered as approximately slow. Several large trees, whether uprooted by the wind or felled for specific reason, have at times come into my hands for disposal, but, generally speaking, the timber is difficult to sell, sometimes even at firewood prices, probably owing to its bulky nature, and that the quality is not generally appreciated.

Probably, too, if a large quantity of the timber were offered on the same estate the merchant might be tempted to buy at a fairly remunerative price, but, as with small quantities of other valuable woods, single trees do not appeal to the dealers in our home-grown timbers. In appearance the timber greatly resembles that of the larch, but is more brittle, of a pleasing reddish-white colour, light, easily worked, and takes a good polish. It contains a volatile oil, which has the property of unsettling printers' ink, while bacon smoked with the wood is rendered unfit for consumption. *A. D. W.*

NARCISSUS "WHITE EMPEROR."

This fine white Trumpet Daffodil was the most admired novelty at the last meeting of the Royal Horticultural Society, and may be considered the best new Narcissus exhibited this season. The flower is large and well proportioned; it is creamy white in all its segments, including the smooth, straight trumpet. White Emperor has been classed as a Trumpet variety, but it was very near to the Leedsii section. The variety was raised by the Rev. G. H. Engleheart, and was shown at the R.H.S. m[illegible] by Messrs. Cartwright and Goodwin and Mr. Christopher Bourne



[*Photograph by W. J. Vasey.*

Fig. 104.—Narcissus "White Emperor."

Received R.H.S. Award of Merit on April 1, 1913.

NOTICES OF BOOKS.

New Work on Dahlias.*

(*See Coloured Supplement.*)

To my mind the sixteenth volume in the Present-Day Gardening Series is the most delightful volume yet published.

I have read it from cover to cover, and some of the pages more than once, and as a "garden decorative" enthusiast of a most advanced type, and one who finds but little to admire in the monstrous exhibition bloom, I can recommend the work thoroughly to that increasingly large number of cultivators who look upon Dahlias as amongst the most gorgeous subjects for decorating the garden in summer and autumn. Mr. Gordon recognises that the pre-eminent quality of a flower is its value for garden embellishment; therefore, whilst telling us all that is worth knowing about Dahlias, he especially describes how good they are to make glad our gardens. But let not the exhibitor imagine that his particular needs have been overlooked, for such is not the case. If a would-be prize-winner will study the information upon cultivation for exhibition purposes and arrangement of the flowers on the show tables, it will be his own fault if he does not leave the next Dahlia exhibition a prouder man than he entered it; for he may learn the exact amount of manure the exhibition plant requires; when to strike the cuttings, when to pot them, when to disbud the plants—in short, when and how to do everything that could be required by the most exacting Dahlia that grows.

The Dahlia has always been so boomed as an exhibition flower, that until recently its claims as a garden plant have been overlooked, and very few owners of gardens have had much chance of estimating its qualities from the latter point of view. With the advent of the Pæony, Collerette and other decorative types, this state of things became out-of-date, and now the exhibitions, like the gardens themselves, are beginning to bear their evidence to the magnificent qualities of the Dahlia; its brilliant colouring, its profuse habit of flowering, its lasting qualities as a cut flower, and its simple requirements in respect of cultivation all contribute to make it a valuable garden plant. It ought soon to be admitted generally that Dahlias are worthy the best place that can be given to them, and we ought not again to hear the remark so often made in the past, "Here's a piece of waste ground; let's put in some Dahlias."

Mr. Gordon traces the history of the Dahlia, shows when the various types were introduced to commerce, and points out the influences these have had on the development of the flower. Such reflections naturally lead him to make some criticisms of the methods of raisers and growers who in former days neglected the garden qualities of the Dahlia in their anxiety to have flowers that would appear perfect on the exhibition table, though often they were fit for no other purpose. The result was seen in varieties that were unable to hold up their flowers above the leaves, sometimes because the stem was all too short, and at others because the stem was far too slender to support the huge bloom. The cultivator, tired of growing great umbrageous leaves and few flowers, wants Dahlias that will come into bloom early, flower freely, grow only a reasonable height, and produce leaves of moderate size—in short, a more easily-handled strain than he has yet been given. I believe that such varieties are forthcoming, and that this book will induce raisers to provide them. It is to be hoped, therefore, that it may find its way into the hands of all garden lovers; many of whom will be astonished to discover what a number of excellent qualities are possessed by a plant they have been unwise enough to overlook. The volume has everything to recommend it; the type is large and good to read, and there is (I wish I could say the same of the volume on Lilies) a good reference index. The eight illustrations are all that we now expect of reproductions from colour-photography, faithful to the originals and in most cases artistic. Having a personal acquaintance with most of the varieties portrayed, I can speak to the excellence of the plates, though I have seen better flowers of Geisha than the specimen illustrated. However, the Supplementary Illustration will afford readers an opportunity of judging for themselves the lifelike appearance of the flowers. *Decorator.*

* *Dahlias.* By George Gordon, V.M.H., Vol. XVI, in "Present-Day Gardening" Series, edited by R. Hooper Pearson. (London and Edinburgh: T. C. and E. C. Jack.) Price 1s. 6d.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

Royal Botanic Garden, Edinburgh—Proposed Guild.—An informal meeting was held recently at the Royal Botanic Garden, Edinburgh, for the purpose of considering the advisability of forming a guild of past and present members of the staff. A temporary committee was elected to take the necessary steps, and they will be glad if all old members of the staff will communicate their addresses to either the interim secretary, W. H. Morland, or myself, so that the list may be made as comprehensive as possible. A circular containing the proposed rules will then be forwarded to them. *R. L. Harrow.*

Lathyrus sativus as Food for Horses.—In the report of the proceedings of the Scientific Committee of the Royal Horticultural Society, on p. 211, some interesting notes are given on the poisonous nature of the seeds of Lathyrus sativus. This calls to my mind an important law suit which was heard at the Bristol Assizes in 1894 in connection with the sale of these seeds for feeding horses, at which eminent counsel on both sides were engaged, and famous scientific men were called to give evidence. This was long before electric or motor traction was used to any considerable extent, and the Bristol Tramways and Carriage Company, which owned the horse-drawn trams of the town, sued a firm of fodder merchants for the loss of twelve horses which had been fed on so-called "Indian Peas" supplied by the defendants. Besides the twelve horses which died, 115 more were affected by the food, the symptoms displayed being stumbling and falling, starting eyes, roaring, and gasping for breath. The seeds were not all those of Lathyrus sativus, and were probably partly those of Pisum arvense and P. sativus; but Professor Green, in giving evidence, stated that of a sample of 335 peas submitted to him no fewer than 325 were those of Lathyrus sativus. The Hindustani name for the peas is Khesári or Kasári, though the name Mattar or Muttar (the Hindustani for Pisum arvense and P. sativum) is also used to signify Lathyrus sativus. Although this latter is included in Sir Arthur Church's volume on "Food Grains of India," it is known to possess poisonous properties; indeed, Sir Arthur himself says: "It has a bad reputation, and is almost universally regarded in Bengal as unwholesome, deranging digestion, and producing dysentery, diarrhœa, and skin diseases. It is mostly used by the poorer classes, being the cheapest and most abundant pulse. Many causes of sudden and incurable paralysis have been undoubtedly traced to the large and continuous use of this seed. It formed, by a series of accidents, the chief food during the years 1829-33 of some of the eastern villages of Oudh. Many cases of sudden paralysis of the lower extremities occurred during that period, the persons attacked being generally under thirty years of age." It would seem to have a similar effect on animals, judging from the case of the Bristol tram-horses; whether the age of the horses had anything to do with it has not been stated. As Mr. Holmes pointed out in the recent meeting of the R.H.S., to which I referred at the beginning of my letter, it behoves those who deal in cattle food to be careful always to refuse the mottled seeds of the Indian Khesári or Lathyrus sativus. *John R. Jackson, Claremont, Lympstone.*

Mazus rugosus.—The plant certificated on March 4 last by the Royal Horticultural Society and illustrated in fig. 94 is distinct from the plant described by Sir Joseph Hooker under that name in the Flora of British India. Mazus rugosus is described as a glabrous or sparsely hairy annual, without runners, with leaves 1 to 3 inches long and flowering stems 2 to 10 inches long. Obviously, quite a distinct plant from that shown before the Royal Horticultural Society. Can Mr. Crisp's plant be one of the new Chinese species, Mazus pulchellus, or an ally? *R. W. Colchester.*

Retirement of Two Yorkshire Gardeners (see page 209).—After ten years' absence I recently visited Tranby Croft Gardens. It was indeed a pleasure to inspect these magnificent grounds with the numerous alterations so skilfully and tastefully carried out, all of which bear testimony of the capabilities of Mr. Leadbetter and his staff. I was glad to meet again many of his assistants who can claim a quarter of a century's service. I think I am right in asserting that *A Yorkshire Gardener* (whose identity is well known and much respected) and Mr. Leadbetter have enjoyed a friendship extending over thirty years. I have known Mr. Leadbetter nearly twenty years, seven of which were spent as his subordinate. *An Old Pupil.*

Sulphur in Soil for Chrysanthemum Cuttings (see p. 223).—In reply to *F. E.* we also saw the sulphur treatment advised for rust prevention, so gave it a trial. We inserted three batches in sulphur-treated soil, and found that they took three weeks longer to root than those without sulphur; each batch contained about 10,000 cuttings, inserted on a bed in a house, so the trial was fairly extensive. My opinion is that the sulphur, being of a cooling nature, acts as a retarding agent. I had intended carrying the sulphur treatment through the final potting, but am a bit dubious now. *J.*

——Reading Mr. Měker's recommendation in the *Gardeners' Chronicle*, November 30 last, to mix sulphur with the soil for Chrysanthemums, and in view of our Chrysanthemums being badly infested by rust for the last two seasons, I decided to give the system a fair trial on about 600 plants in 70 varieties, grown partly for decorative and partly for specimen blooms. So far the plants are a decided improvement to what they have been for the past two seasons, and are looking very promising considering that nothing beyond ordinary care and attention has been expended on them. After reading the note by *F. E.*, I minutely examined the batch of 600 plants, but failed to find any trace of rust, and on the whole the plants are a fair healthy batch for this season of the year. The cuttings were obtained from stools more or less badly infested with rust, and spores of the disease were in evidence on the old plants. The proportions of sulphur recommended by Mr. Měker were used to the full, viz., ¾ lb. to every 100 lbs. of soil. The difference between the method adopted by *F. E.* and that adopted by us was that we did not add sulphur to the soil used for the cuttings, whereas he did. We added sulphur to soils for the first potting and afterwards, and perhaps this is the point that determines success or failure. It will be interesting to watch the effects of the sulphur on our plants at the end of July, as for two seasons during the latter end of July the rust fungus has spread over the plants like a plague, and although it has fallen to my lot when in the north of England to have had occasional outbreaks of rust on a few plants just about the time of bud-forming and bud-showing, I never in all my experience saw plants so badly infested. Should the use of sulphur in the potting soil prove to be a prevention against rust, I shall owe Mr. Měker a debt of gratitude. *A. H. Tongswood.*

The Unfairness of Selling Coke by Weight.—In the issue for March 15, page 171, a correspondent drew attention to a

grievance affecting all users of coke, namely, the discrepancy between the weight of fuel ordered and paid for and the actual weight delivered to the purchaser. I use a considerable quantity of this fuel, and am a good deal affected by this practice of sellers. I have been making careful examinations, and the following is the mean result of my measurements :—10 lbs. of coke, which had been carefully dried under cover during three days, was watered, thoroughly drained and again weighed. The coke, which when dried had weighed 10 lbs., now weighed 16 lbs. This result fully bears out the calculation of your correspondent, and corroborates his statement of the facts. Surely it is time that steps were taken to remedy this flagrant injustice, and that purchasers of coke may be assured that when they order a ton of coke they may count on the delivery of a ton of undiluted fuel. The best plan would be a reversion to the old system of sale by measurement instead of by weight as now in vogue. *W. B.*

Spraying Fruit Trees in Flower.—I have read the excellent notes by *Southern Grower* on p. 213 on the market fruit-garden, whose articles I always peruse, both with pleasure and profit. In the paragraph relating to the early appearance of aphis he seems to be doubtful about the spraying of the trees while in blossom. It may not be generally known that Plum trees may be safely sprayed with lime whilst they are in full blossom, and without having the slightest effect on the fertilisation of the blossoms. Close to where I write I saw, on March 31, scores of Plum trees, 20 feet high, which had been sprayed two days previously, although they bore an abundance of fully-developed blooms. The space underneath was thickly planted with Gooseberry bushes, which were white with the lime. No apprehension of harm to either the Plums or the bush fruit was entertained, as the spraying of trees when in flower is no new thing. As an experiment last year I sprayed Apple trees with lime when the blossoms were fully developed, and with no harmful effect. For months afterwards the Apples carried the lime in the eye. The use of lime with the addition of salt when the buds of the Apple blossom are breaking away from the protecting calyx is an excellent method of preventing an attack of Apple sucker. *South Hants.*

MOVABLE GLASS-HOUSES.

The advantage of being able to move a glass-house, heated or unheated, so as to cover in succession a number of plots of land planted in advance, has long been obvious to market gardeners. The only difficulty in bringing the system into common use has been that of moving great structures easily and without racking them. That this difficulty has been entirely overcome I have been convinced without a shadow of doubt by the inspection of the patented invention of Messrs. H. and A. Pullen-Burry, Ltd., of Sompting, near Worthing. When it is stated that a little son of Mr. A. Pullen-Burry, six years old in March last, moved a double-span house, 97 feet by 41 feet, weighing, I was told, about 20 tons, for a few minutes in my presence, by turning a fly-wheel at one end of the house, which is moved sideways, the perfection of the mechanism may be easily imagined. I found that I could move the house with the greatest ease by turning the wheel with one hand. The movement, of course, is slow, as it should be; but the house can be shifted from the space which it covers over an equal space of fresh ground by one man in twenty minutes.

The house is exactly similar to an ordinary glass-house, except that, instead of being built on walls, it rests on a strong pitch-pine framework, which is carried on large wheels running on concrete walls a few inches above the ground. These walls run the whole length of the set of plots of land over which the house is to be shifted in the course of twelve months. They are placed at intervals of about 16 feet, and along each run five wheels, the middle one in each set, which is between the two spans, being a driving wheel. The two outside walls have iron rails embedded in them, while the intermediate ones are plain concrete made smooth on the tops with cement. The boiler is fixed in one corner of the house, so as to run with the house on one of the outside rails. None of the wheels are flanged; but at each corner are wheels placed horizontally, so as to run along the sides of the iron rails just mentioned. These would keep the house quite square while it is being moved, even if the gearing did not work truly. As a matter of fact, however, the gearing runs so perfectly that, as already stated, there is no interval between the starting of the two ends of the house. The way in which the tendency to tortion has been overcome is one of the cleverest parts of the invention. By means of a simple arrangement of set screws, the driving shaft is allowed a graduated amount of play from one end to the other. In this way the motion of the shaft between the set screws takes up what little lost motion there would otherwise be owing to tortion, so that the motion of the shaft is imparted to all the driving wheels instantaneously. Before the actuating wheel has been moved round one-sixth of its circumference the house is in motion evenly at both ends, in spite of the fact that the gearing is 120 to 1.

Standing at the end opposite to the one at which the fly-wheel is stationed, so that I could see the man beginning to work it, I found that there was not a moment's delay in the starting of the end at which I stood. Even in the case of a house 300 feet long, Mr. Pullen-Burry informed me, the two ends would start moving simultaneously.

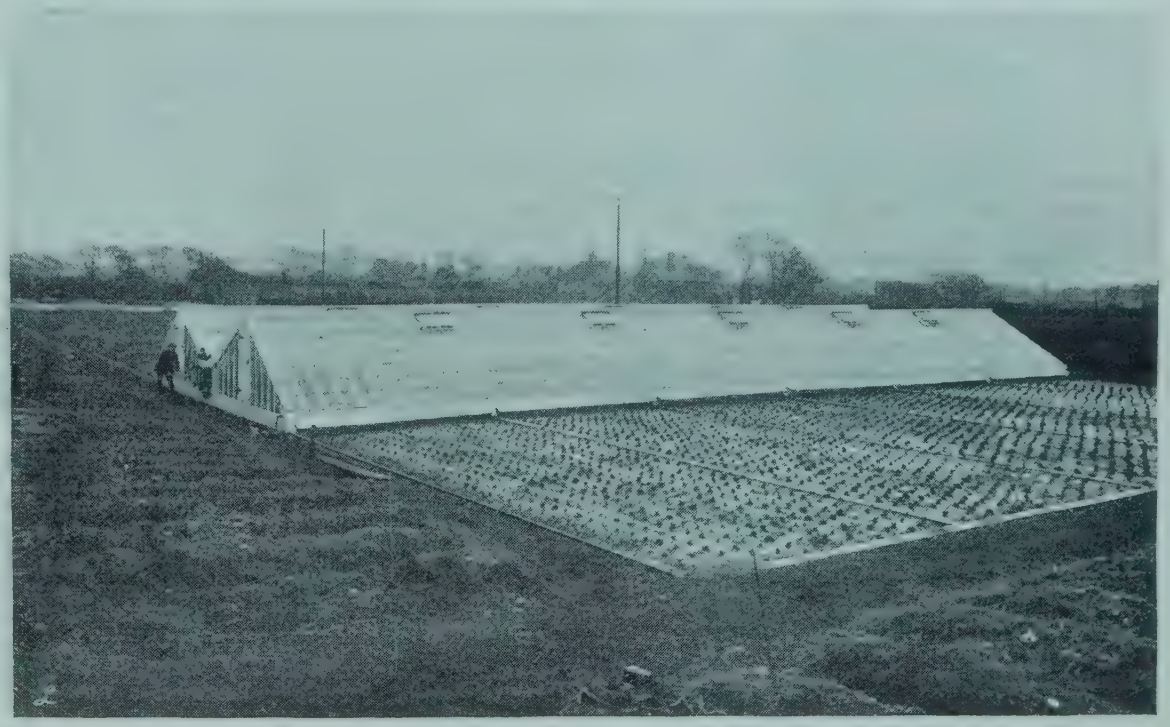


Fig. 105.—Exterior view of one of Messrs. Pullen-Burry's movable hot-houses.

The rotation of crops which may be finished off or helped forward to finish in the open air in the course of twelve months by means of one movable house can be varied indefinitely. The eleven plots laid out for the house inspected are for the following crops :—1, Double White Narcissus; 2, Cos Lettuce, Cabbage, Cauliflower, and Carrots; 3, Tomatos and French Beans, the latter to be gathered before the former are fully grown; 4—7, Asparagus in successive lots; 8, Mint; 9—10, Golden Spur Narcissus; 11, Ornatus Narcissus. The space covered by the eleven plots is one acre. When asked to name a rotation excluding flowers, Mr. Pullen-Burry off-hand suggested three plots of Asparagus, one of Cauliflowers, Cabbages, Lettuces, and Carrots grown together, one of Turnips, one of French Beans and Tomatos together, and one of Globe Artichokes for a succession to [illegible] months. The Asparagus would be ready to be marketed



Fig. 106.—Interior view of the hot-house.

in December and up to the middle of January, when they would command extremely high prices.

The most numerous succession of products which Mr. A. Pullen-Burry, who is a market gardener of wide and prolonged experience, whose business covers 400 acres of land, including his orchards, could suggest was one starting in November with the forcing of three plots of Asparagus, and proceeding with one plot of Trumpet-Major or Henry Irving Narcissus, two plots of Golden Spur, one plot of Sir Watkin, two plots of Ornatus, two of double white, one plot of Gladioli, one of late Pæonies, one of Asters, one of Tomatos to be finished off in August and September, and one for finishing off a July-sown French Bean crop, to be marketed in October.

It is further suggested that Peaches, Nectarines, choice Pears, and even Vines, trained on hinged trellises which can be bent down towards the ground when a hot-house is to be moved over them, could be included in the crops to be forced by means of a movable structure. Again, various crops can be started under glass, and left to mature in the open, the movable house being transferred to other crops.

In theory, at least, there seems to be hardly any limit to the uses to which the new movable hot-houses may be put, though it remains for experience to prove how far what appear to be reasonable expectations will be realised.

To me it seems almost certain that French gardening in this country will be superseded by the movable glass-houses. It is estimated that the capital outlay in levelling an acre of land, constructing the concrete travelling ways, and purchasing a hot-house of two spans 100 feet by 40 feet, complete with boiler, hot water pipes, and cold water supply pipes, will be about £500. This is much less than the capital required for one acre of a French garden, including the vast quantity of manure which it requires, while the subsequent cost of manure will be greatly less than for a French garden, and the saving in labour and anxiety will be enormous. Moreover, a movable house is considered a "tenant's fixture"; and, in Mr. Pullen-Burry's opinion, would not be subject to rates.

A visit was also paid to the extensive orchards in which the various kinds of hardy fruit are grown, with Rhubarb, Narcissi, and Pæonies underneath them in some cases; also to the fixed hot-houses and the large stretches of market garden land. A particular feature of the fruit department is the growing of choice Pears trained on walls, some of which are wooden walls constructed for the purpose. *A Southern Grower.*

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

APRIL 1.—*Present:* G. Gordon, Esq. (in the Chair); Messrs. A. Worsley, R. A. Curtis, W. Hales, G. Massee, and F. J. Chittenden (hon. sec.).

Fasciated Stock.—Mr. H. STUART THOMPSON sent from the South of France, part of a fasciated example of Matthiola sinuata bearing hundreds of flowers and having a stem about 2¾ inches in width. Though fasciated plants are very frequently shown before the committee, perhaps more frequently than those showing any other aberration of growth, Stocks have rarely or never been exhibited in this condition. The present specimen was growing on the cliff outside an hotel garden, and others there showed a similar habit of growth.

Locusts and Coconuts.—Mr. GILLIAT sent a note concerning the destruction of seedling coconuts over an area of 500 acres in the Federated Malay States, where the trouble from this pest has recurred in a second year. The use of paraffin had proved unsuccessful in abating the trouble, and it was suggested that Paris green or lead arseniate should be tried, either as a spray or by drenching some locusts collected and slightly crushed beforehand with this poison. Some species of locust are cannibals, and it might be possible to check their ravages by collecting and poisoning some of them in this way.

Malformation in double Primula.—Dr. J. MACWATT sent a curious flower from a double Primrose seedling; the calyx was much larger than usual, and had double the usual number of teeth. It surrounded two separate and distinct double corollas, separately inserted on the receptacle and normal in every other respect.

SCOTTISH HORTICULTURAL.

APRIL 1.—The monthly meeting of the above Association was held at 5, St. Andrew Square, Edinburgh, on this date. Mr. KING, the president, was in the chair, and there was an attendance of 135.

A lecture was given by GEORGE G. HAMILTON, Esq., M.B., Bournemouth, on "Some Gardens of Bournemouth and the New Forest." The lecture was illustrated by about 90 Autochrome lantern slides. Mr. HAMILTON used a large translucent screen, and showed Roses, Orchids, new and old world gardens in all the beauty of spring, summer, and autumn.

The exhibits were: Jasminum primulinum, from Mr. A. PORTER, Davidsons Mains; 21 varieties of Hyacinth, from the Edinburgh Public Parks Department; a vase of Rose "Prince de Bulgarie," from Messrs. TODD & Co., Edinburgh; spikes of Richardia africana, showing double spathes, from Miss BURTON, Polton, and Mr. JAMES BRUCE, Davidsons Mains; a new wasp and fly trap, from Mr. THOS. REID, Eildon Hall Gardens, St. Boswells; and a new flowerpot stand, from Mr. A. W. NISBET, Rosehill, Kilcreggan.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

MARCH 20.—*Committee present:* Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, Dr. Hartley, F. A. Hindley, A. J. Keeling, D. McLeod, C. Parker, H. Thorp, Z. A. Ward, A. Warburton, and H. Arthur (secretary).

A *Gold Medal* was awarded to Z. A. WARD, Esq., Northenden (gr. Mr. Weatherby), for an excellent group of plants, containing a fine collection of Odontoglossums.

A large *Silver Medal* to Col. J. RUTHERFORD, M.P., Blackburn (gr. Mr. Lupton), for a group of Odontoglossums in variety; *Silver Medals* to R. ASHWORTH, Esq., Newchurch (gr. Mr. Gilden), who staged a nice mixed group; F. A. HINDLEY, Esq., Bradford, for a miscellaneous group.

Bronze Medal to Rev. J. CROMBLEHOLME, Clayton-le-Moors (gr. Mr. Marshall), for a small group of Cypripediums. Other exhibitors included O. O. WRIGLEY, Esq., Bury (gr. Mr. Rogers), who staged a group to which a special vote of thanks was granted; J. H. CRAVEN, Esq., Keighley (gr. Mr. Corney); Mr. W. SHACKLETON, Great Horton, and Mr. J. BIRCHENALL, Alderley Edge.

AWARDS.

FIRST-CLASS CERTIFICATE.

Odontioda daltonensis (Odontoglossum Phœbe × Cochlioda Noezliana), from J. H. CRAVEN, Esq.

Odontoglossum Rossii majus Ward's variety; large, well-set flowers, from Z. A. WARD, Esq.

Oncidioda Cooksonæ Ashland's variety (Oncidium macranthum × Cochlioda Noezliana); flowers bronzy-scarlet, from R. ASHWORTH, Esq.

AWARDS OF MERIT.

Odontoglossum tripudians, Ward's variety, O. crispum Snowball and *Miltonia vexillaria Cringlewood variety;* from Z. A. WARD, Esq.

Odontoglossum triumphans "Hesperidas," Cattleya Trianae "Ida," and *Odontoglossum illustrissimum;* from R. ASHWORTH, Esq.

NURSERY AND SEED TRADE.

MARCH 31.—The annual general meeting of the Nursery and Seed Trade Association was held at 32, Gresham Street, London, on this date. The following members were present:—Messrs. J. B. Slade (Messrs. Protheroe & Morris) in the Chair, G. H. Barr (Messrs. Barr & Sons), J. Harrison (Messrs. Harrison & Sons), H. W. W. Nutting (Messrs. Nutting & Son, Ltd.), H Simpson (Messrs. Cooper Taber & Co., Ltd.), H. E. Silberrad (Messrs. R. Silberrad & Son), and A. F. Warner (Messrs. Schaffenius, Ltd.).

From the report submitted to the meeting it was shown that the Association had made 993 Status reports to its members during the year, and the Association and its solicitors had collected £4,290 4s. 11d., accounts due to members. The committee at their meetings during the past year considered and discussed the rates charged by railway companies for carriage of goods, also the Agricultural Rates Act, the Shops Act, and the National Insurance Act, and how the same respectively affected the members of the Association. In response to enquiries regarding the increased rates for insurance for Workmen's Compensation they obtained from Tariff and Non-Tariff assurance companies and societies the rates of premiums charged for insuring the various employees of market gardeners, nurserymen and florists against accidents.

Mr. N. N. Sherwood (Messrs. Hurst & Son) was re-elected President, Mr. H. W. W. Nutting (Messrs. Nutting & Son, Ltd.) was re-appointed Treasurer, and Messrs. H. Simpson and G. H. Barr, Trustees.

LIVERPOOL HORTICULTURAL.

APRIL 2 and 3.—The twenty-fifth spring show of this Society was held in the Corn Market, Liverpool, on these dates. The entries were slightly fewer compared with last year, which was more noticeable in the classes for hardy Rhododendrons and other forced plants. The exhibits in the bulb section were quite up to the average, Hyacinths and Daffodils being much superior, whilst the non-competitive exhibits were in excess of the average for these shows.

In the class for four pots or pans of herbaceous and bulbous plants, W. TOD, Esq. (gr. Mr. G. Eaton) was successful with fair-sized, well-flowered plants of Lilium longiflorum, Dielytra spectablis, Tulip William Pitt, etc.; 2nd, W. LOCKETT, Esq. (gr. Mr. E. R. Finch), who showed a fine collection of Tulips. There were six entries in the class for the decoration of a dinner-table, which was best arranged by Miss G. E. MILM, Litherland. For twelve Hyacinths, distinct, A. EARLE, Esq. (gr. Mr. T. Hitchman) was awarded the 1st prize, this exhibitor showing some excellent spikes, the best including Electra, Mountain of Snow, and Jacques; for six plants Alderman H. R. DIXON-NUTTALL (gr. Mr. J. W. Barker) excelled. In the class for six pots of Hyacinths, three bulbs in each pot, W. LOCKETT, Esq. (gr. Mr. E. R. Finch) won with excellent spikes; the plant of King of the Blues was exceptionally fine; for three pans of these flowers ten bulbs in each receptacle, Drs. TISDALL and INGALL (gr. Mr. G. Osborne) were successful. Mr. Loo THOMSON won the prize for six pots of Daffodils with well-flowered specimens, Glory of Leiden, Olympia, and Madame de Graaff being especially noteworthy. For twelve pots of single Tulips Mr. E. R. FINCH was successful, the varieties Brunhilda and Hobbema being excellent; for six pots of these flowers C. J. PROCTER, Esq. (gr. Mr. J. Williams) was placed first, and he also excelled in the class for six double varieties. J. FINDLAY, Esq. (gr. Mr. E. Wharton) was successful in the class for a basket of Daffodils. For eight vases of cut Narcissi Mr. T. HITCHMAN proved the winner, his blooms of Barri conspicua and Emperor being extra fine. A. A. PATON, Esq. (gr. Mr. R. Bentham) excelled in the class for six Amaryllis, with flowers of fine substance and colour. Mr. E. R. FINCH was awarded the first prize for three greenhouse Azaleas, and for one greenhouse plant Mr. G. EATON won with a fine specimen of Imantophyllum miniatum. Mr. EATON was again placed first in the class for two Orchids, showing Cymbidium Lowianum, which was possibly the most noteworthy exhibit in the show, and was awarded the cultural commendation of the North of England Horticultural Society; and Cœlogyne cristata Chatsworth var., which was also a splendid plant; 2nd, Mr. G. OSBORNE, who showed two well-flowered Dendrobiums. F. R. CROSS, Esq. (gr. Mr. C. Duke) proved the winner in the class for two cool-house Orchids. For one Orchid Mr. EATON was again successful with Cœlogyne cristata Lemoniana,

which was also recognised by the North of England Society by the award of their Silver-Gilt Medal. J. W. Hughes, Esq. (gr. Mr. J. McColl) was successful in the class for three exotic Ferns; he had a very large plant of Goniophlebium subauriculatum. Mr. T. Hitchman showed the best three Azaleas, and Mr. E. R. Finch excelled for one plant of Azalea. Mr. T. Rigg was the winner in the class for one hardy Rhododendron. Mr. Finch was successful in the class for a greenhouse variety. For four forced hardy plants Mr. G. Eaton was awarded the first prize. Mr. G. Osborne and Mr. F. Atkin showed the best Palms. Sir W. B. Bowring, Bart., showed the best Cyclamens, Mrs. Duncan (gr. Mr. F. C. Keightley) the best Cinerarias, and Mr. J. McColl the best Primulas. Messrs. Loo Thomson and J. Macfarlane were successful exhibitors in the amateurs' classes.

Non-Competitive Exhibits.

Gold Medals were awarded to Messrs. R. P. Ker and Sons, Liverpool, for a collection of Amaryllis and a selection of hardy forced plants; Messrs. H. B. May and Sons, Edmonton, who showed Ferns and Clematis; Messrs. Barr and Sons, Taplow, who exhibited a collection of Narcissi, including many new varieties (the North of England Society awarded this group a Silver-Gilt Medal); Messrs. Hogg and Robertson, Dublin, who contributed a fine bank of Daffodils; Messrs. Stuart Low and Co., Enfield, for Carnations and Orchids; Messrs. Young and Co., Cheltenham, who showed Carnations in fine variety; and Messrs. J. Piper and Sons, Barnes, who staged a rockery.

Small Gold Medals were awarded to Messrs. W. Rowlands for Tulips, Daffodils, and hardy forced plants, and Mr. H. Middlehurst for spring-flowering Tulips.

Silver Medals to Messrs. Thomas Davies and Co., Wavertree, for Cinerarias, Tulips and Spiraeas; Messrs. Bees, Ltd., Liverpool, for hardy flowers; Mr. G. Reuthe, Keston, for hardy plants; and Baker's, Wolverhampton, who showed Alpine and border plants.

HORTICULTURAL CLUB.

April 1.—The usual monthly dinner of the members of the Horticultural Club was held at the Hotel Windsor on this date. After the dinner a lecture on "Some Nature Notes in South Africa" was delivered by Mr. J. Edmund Clark, B.Sc., Mr. George Monro presiding over a company of 26, including several ladies. The lecturer was present at the meeting of the British Association held in South Africa in 1905, and he showed lantern slides reproduced from photographs taken during his journey from Cape Town to Kimberley and other inland places. Views of the Karroo showed the sparse vegetation of that district, which supports only one sheep to every three acres, scrubby Acacias growing in isolated patches being almost the only plants. Mr. Clark displayed dried specimens of several plants collected by him, including Hymenophyllum tunbridgense, Euphorbias, Leucadendron argenteum and Proteas, which are amongst the most beautiful flowers of South Africa. An interesting slide showed healthy plants of Cupressus growing in a town street where no rain had fallen for 15 months.

ROYAL CALEDONIAN HORTICULTURAL.

April 9 and 10.—The Spring Show of this society was held in the Waverley Market, Edinburgh, on Wednesday and Thursday last. The competitive entries were above the average, and there were many excellent exhibits by traders. Besides the usual bulbous and spring-flowering plants, there was a fine show of Alpines. The only special award made was a First-Class Certificate to a new hybrid Cypripedium, provisionally named *C. Rothlow* (= *C. Rothschildianum* × *C. Lawrenanum*), exhibited by the raiser, Mr. W. Sharp, Freeland Gardens, Forgandenny. The following awards were made to honorary exhibits:

Gold Medals.—To Dobbie and Co., Edinburgh, for Cinerarias, Calceolarias, Roses and Tulips; D. Kyle, Edinburgh, for Tulips and other bulbous plants and spring-flowering shrubs, etc.; R. B. Laird, Dickson and Sons, Ltd., Edinburgh, for flowering shrubs; Dicksons and Co., Edinburgh, for new seedling Amaryllis, Rhododendrons and other flowers; and J. and A. Glass, Edinburgh, for perpetual-flowering Carnations.

Silver Gilt Medals.—To Wm. Cutbush and Son, London, for perpetual-flowering Carnations and Alpines; Hogg and Robertson, Dublin, for Anemones, Narcissi, and Tulips; Storrie and Storrie, Glencarse, for Cinerarias, ornamental Borecoles, and Primula obconica gigantea; Cunningham, Fraser and Co., Edinburgh, for Alpines; and Sander and Son, St. Albans, for Orchids.

Silver Medals. — To John Forbes, Hawick, Ltd., for Auriculas and Alpines; Clarence Elliot, Six Hills, Stevenage, for Alpines; Theo E. Dawes, Syderstone, Norfolk, for Rhubarb; Thyne and Son, Dundee, for Alpines; The Liverpool Orchid Nursery, Ltd., for Orchids; J. Piper and Son, London and Barnes, Surrey, for Alpines.

Bronze Medal. — To Reamsbottom and Co., Geashill, King's County, for St. Brigid Anemones.

The show was opened by the Marchioness of Linlithgow, and the Lord Provost Inches, Edinburgh, occupied the chair.

DEBATING SOCIETIES.

DRUMLANRIG CASTLE GARDENS.—The last meeting of this Society for the session was held on Monday, the 24th ult., when a lecture on "Kew Gardens" was delivered by Mr. Thomas Oliver, Head Foreman at Drumlanrig. The chair was occupied by Mr. Inglis. Views of the large Glasshouses were shown, including the Water Lily House. A view of the Palm House was also shown, and another of the Temperate House. The views shown of the grounds were exceptionally interesting, especially the Rhododendron Dell, Lake, and Rock Garden.

SOUTHAMPTON AND DISTRICT GARDENERS'. The monthly meeting of this Society was held in the Highfield Institute on Thursday, the 27th ult., when there was a good attendance of members. The President, Mr. H. E. Molyneux, occupied the chair. Mr. G. Ellwood, Swanmore Park Gardens, Bishop's Waltham, read a paper on "Vegetables for Home and Exhibition." Mr. Ellwood advocated deep cultivation, and recommended that trenching on light soils should be done in the autumn, and on heavy soils at the end of February or the beginning of March. Mr. Ellwood dealt with the cultivation of all the most popular kinds of vegetables in detail.

BRITISH GARDENERS' ASSOCIATION (Kew and District Branch).—The Kew and District Branch of this Society held their monthly meeting on the 14th ult., between thirty and forty members being present. An interesting paper was read by Mr. Ing on "Hampton Court Gardening," from a historical point of view.

CARDIFF GARDENERS'.—The annual meeting of this Association was held on the 18th ult. The year's work was reviewed by the chairman, and a presentation was made to the hon. secretary for his work during the past four years.

BIRMINGHAM AND DISTRICT GARDENERS'.—At a recent meeting of this Association, held in the Athletic Institute, Birmingham, Mr. J. Webb, gardener to B. Kendrick, Esq., Metchley House, Edgbaston, read a paper entitled "Rotation of Vegetable Crops." Mr. Webb gave a survey of a garden 60 yards in length, allotted for crops of spring Cabbage, Cauliflower, Broad Beans, Peas, Carrots, Parsnips, Eschalots, Onions, and Spinach. The preparation of the ground, said Mr. Webb, is an important detail in growing vegetables, and he recommended the free use of lime for gardens in the Birmingham district, especially for Spinach or Cabbage crops. As a preventive of the caterpillar pest of Cabbages Mr. Webb recommended planting rows of Broad Beans between the Cabbage bed, stating that the strong aroma of the flower of the Beans caused the butterfly of the caterpillar to depart from the locality.

BROUGHTY FERRY HORTICULTURAL.—The usual monthly meeting of this Society was held on the 25th ult., the president, Mr. James Bethel, presiding. A lecture on "Bacteria and Sterilisation of Soils: How They Affect the Gardener," illustrated with lantern slides, was delivered by Mr. George P. Berry, of the Edinburgh and East of Scotland College of Agriculture. The lecturer referred to the families of bacteria which existed in most soils, some being harmful and others beneficial. In acid soils, said Mr. Berry, the harmful kinds predominated, but where the soil was suitable the helpful bacteria existed. Lime was the best material for treating the acid soils. The lecturer next dealt with the sterilisation of soils, and recommended the use of "creole" for sterilising soil in the garden, but soil used for potting purposes could be treated by steam.

DUMFRIES AND GALLOWAY GARDENERS'.—At the meeting of this Association, held on the 5th inst., Mr. S. Arnott presided over an excellent attendance. Mr. J. Henderson, gardener to James Wyllie, Esq., Elmbank, Dumfries, gave a paper on "The Chrysanthemum." The lecturer treated of his subject in a most practical manner, and considerable discussion took place on several of the points in the paper.

TRADE NOTE.

JAMES WHITAKER & SONS, LTD.

The above-named company has been registered with a capital of £20,000 in ordinary shares of £100 each, 120 cumulative 7½ per cent. Preference shares of £25 each, and 1,400 Deferred 5 per cent. shares of £5 each. Business: To take over that of nurserymen, market gardeners, seedsmen, farmers and florists, carried on by James Whitaker & Sons at Prescot and Knowsley, Lancashire. Private company. Office, The Nursery, Liverpool Road, Prescot.

Obituary.

Thomas Gilmore.—Our contemporary, the *American Florist*, announces the death of Mr. Thomas Gilmore, which took place on February 21 last. The deceased was head gardener to Mr. August Belmont, of Hempstead, Long Island, New York, and had held the position for twenty-five years. Mr. Gilmore, who was seventy-six years of age, was a native of Scotland.

THE WEATHER.

GENERAL REMARKS.

April 8, 1913.

Weather.—During the greater part of the period the conditions were dry, except in Ireland and the southern and south-western districts of England. In the latter part of the period the dry weather extended to those districts also. There was, however, a great deal of cloud over the eastern half of England, as well as in the English Channel. Lightning was observed at West Linton on April 1, and thunder occurred at Tunbridge Wells. On the 3rd thunder was also heard at Gordon Castle.

Temperature was above the mean except in Ireland S. and the English Channel, the excess being about 1.5° in some parts of Great Britain. The highest of the maxima were registered on very irregular dates, and ranged from 60° in the Midland counties and Scotland W. to 56° in Ireland S. The lowest of the minima, which occurred during the earlier half of the period, varied from 23° in Scotland E. and 25° in Scotland N., to 32° in England N.E. and Ireland N., and to 40° in the English Channel. The lowest grass readings were 18° at West Linton, 19° at Balmoral, 20° at Dublin, and 22° at Birmingham. At a depth of both 1ft. and 4ft. the temperature of the soil was nearly everywhere above the average, the excess being greatest in the south-east of England.

Mean Temperature of the Sea.—On nearly all parts of the coast the water was colder than during the corresponding week of last year, the difference being more than 2° at some stations in the north-east and in the extreme south-west; generally, however, the temperature was above the average. The mean for the week varied from 51° at Seafield and 49° at Scilly to 40.4° at Burnmouth.

Rainfall was less than the average in all districts, the deficit being large in Scotland and the north-west of England. In some Scottish and English localities the total fall was less than 0.10 in.

Bright Sunshine exceeded the normal in Ireland, the western districts of England, and in Scotland N. and E., but was less elsewhere. In Ireland N. and S. the mean daily duration was about 6½ hours, and in Scotland E. about 6¼ hours. In the central, eastern and south-eastern parts of England, however, it was less than 4 hours. The percentage of the possible duration ranged from 50 in Ireland N. and 47 in Ireland S. and Scotland E. to 26 in England E.

Barometer and Wind.—During the early days of the week depressions of little intensity moved across these islands in a general easterly direction, and the main wind current was between south and west, but later in the week pressure became high over northern Europe, and a depression, which appeared off the west of Ireland, travelled to the south-west of France, and the wind in these Islands shifted to the eastward. Subsequently the anticyclone extended over our northern districts at the same time that the French depression increased in depth and moved north-east, and the increased gradient caused strong to high winds from between north and east in the east and south of England.

THE WEATHER IN WEST HERTS.

Week ending April 9, 1913.

Cold Winds.—The early part of the week was fairly warm, but for the last two days there has been a fall in temperature both during the daytime and at night. On the two coldest nights the exposed thermometer registered 9° of frost. The ground temperatures have also fallen, and are now 1° colder at 2 feet deep, and 2° colder at 1 foot deep, than is seasonable. There was a little rain on the first two days, but the rest of the week was virtually rainless. This was the first dry week for four weeks. There has been no measurable percolation through either of the soil gauges for the last two days. The sun shone on an average for 4¾ hours a day, or for about a quarter of an hour a day longer than is usual at the same period in April. The winds were as a rule of moderate strength, and for the last six days have come almost exclusively from some point between north and east. The mean amount of moisture in the air at three o'clock in the afternoon exceeded a seasonable quantity for that hour by 3 per cent. *E. M., Berkhamsted, April 9.*

Answers to Correspondents

Arum with Double Spathe : *Eden Fruit Stores and E. L.* It is not unusual for Richardia (Arum Lily) to develop a double spathe. We frequently receive specimens from correspondents.

Book : *G. F. Cut Flowers,* by R. P. Brotherston, obtainable from our publishing department, price 3s. 10d., post free.

Broad Beans Diseased : *W. D. R.* The Beans submitted are infested by the "Bean-seed beetle" (Bruchus rufimanus). The presence of the insect does not prove that the Beans are "old seed," as you surmise; but they should not be used for planting, as the succeeding crop may also be attacked.

Correction.—The lecture on "The Literature of the Rose," delivered at the last fortnightly meeting of the R.H.S. by Mr. Arthur W. Paul, was wrongly attributed in our report to Mr. George Paul.

Cultivation of Irises: *E. B. Anderson.* For general cultivation the Irises mentioned may be divided into two groups. Iris Hookeriana requires much moisture, and should be grown in boggy, but not stagnant, soil in a sunny situation. It is best planted on sufficiently high ground to allow the roots to penetrate the soil in search of water. As it is usually short lived, fresh stock should be raised periodically from seed, which is formed freely. The other three species you mention, I. minuta, I. kumaonensis, and I. ruthenica (cæspitosa), all grow best in moderately rich, well-drained soil, and do not require lime. They prefer a half-shady, well-sheltered position. In preparing the site for them, take out the soil to a depth of 15 or 18 inches. At the bottom of the trench place a layer of broken bricks or stones, and on the top of these a mixture of equal parts loam, leaf-mould and sand. The best time for planting, which should be done firmly, is in the spring, when growth is starting afresh.

Grapes Unhealthy : *C. B. E.* No disease is present. The berries have been punctured by aphides, hence their stunted growth.

Insect in Moss: *Constant Reader.* The insects submitted for determination are the larvæ of a species of dipterous insect, and not in any way related to the so-called wire-worm, which is the larval stage of an elaterid beetle.

Insect on Coleus : *L. N. I.* The insect submitted for identification is the so-called Lantana bug (Orthezia insignis). This insect is a destructive pest in many parts of the world, and is particularly abundant on Lantana, hence its specific name. It is a general feeder, and may spread to other plants.

Liquid (Horse) Manure : *W. J. G.* Liquid manure made from horse droppings is perfectly safe to water pot plants, provided it is properly diluted. If it is applied to the roots in a tepid state two or three times during the week after the soil has been permeated with roots it will prove beneficial to the plants. If soot is added to the manure it will be beneficial; tie the materials in a sack and place in a tub of water, using only the clear liquid.

Names of Plants : *P. S.* 1, Leycesteria formosa; 2, Cassinia fulvida; 3, Thymus Serpyllum lanuginosus; 4, Pieris floribunda.—*T. S.* Sparmannia africana.—*W. L.* Viola odorata var. sulphurea (Vilmoriniana).—*Bulbo.* Amelanchier canadensis, Tritonia crocata var., Eupatorium Purpusii.—*A. E. J.* Camellias: 1, Gilesii; 2, Eclipse; 3, Bealii; 4, not recognised; 5, Fimbriata; 6, not recognised; 7, Rose Tausendschön. — *R. B. B.* 1, Epidendrum virens; 2, Spathoglottis plicata; 3, Masdevallia inocharis; 4, Dendrobium moniliforme; 5, Vanda parviflora; 6, Rodriguezia secunda. — *A. W.* Trichopilia tortilis: a native of Mexico. — *W. Godwin.* Sophora (Edwardsia) grandiflora and Periploca græca probably. The flowers are abnormal and much withered.—*J. B.* Lælia Pacavia (tenebrosa × purpurata).—*W. B.* Hippeastrum equestre.—*A. P.* 1, Muscari conicum; 2, Alyssum saxatile; 3, Erythronium Dens-canis; 4, Nepeta Glechoma variegata; 5, Orobus vernus; 6, Primula rosea.

Peach Trees : *J. F. H.* and *Constant Reader.* The Peach shoots are attacked by the Silverleaf disease. This disease is caused by the fungus Stereum purpureum, but no certain method of combating it has been discovered. Stereum purpureum gains access to the plant through an injury to the superficial tissues, such injury being sometimes caused by cold winds. It has been claimed by New Zealand growers that sulphate of iron will check the disease. The spores of the fungus are developed on dead branches, therefore a vigilant watch should be kept on diseased trees, and their dead branches should be removed and burned without delay.

Relaying Turf in Park : *E. W.* The best and cheapest way to get rid of the ridge and furrow surface is to carefully remove the turf and re-lay it after the ridges have been levelled into the furrows and trodden therein in order to secure a level surface when finished. Afterwards give the grass a light surface-dressing of fine soil or leaf-mould, distributing the materials with a besom so as to fill up the crevices between the newly-laid turves.

Rose Garden : *T. J.* The Roses being badly affected with rust disease, the plants should be syringed at once with sulphate of copper at a strength of 2 ounces in 3 gallons of water. Treat the soil in which the Roses are planted with the same specific. Burn all fallen leaves and prunings. In the summer, spray the plants with the Bordeaux mixture or ammoniate carbonate of copper solution. If this treatment is continued the plants should be ultimately free from the disease. It will not be necessary to remove all the old soil and plant again, but it will be an advantage to remove the top few inches and replace with loam of the nature you describe.

Roses Unhealthy : *W. L.* The variety is Maréchal Niel. We should say the bruised appearance of the buds is owing to some cultural defect rather than disease, although this Rose is often suddenly attacked with canker. Probably you have kept the atmosphere of the house too damp, or have sprayed the flowers with some insecticide that has been too strong. If there are more buds to expand, it would be wise to ventilate the house a little each day, even affording just a little ventilation at night. This will prove beneficial, providing you do not allow the temperature to fall below 59°. After the plant has finished flowering, give plenty of heat and moisture to encourage new shoots, which will attain considerable length by the autumn, providing the roots are in a healthy state. From these new shoots you should obtain a fine crop of blossom next spring.

Stopping Chrysanthemums: *W. G. S.* If specimen plants are required, they should be stopped on two or three occasions, the last time at about the end of June. If you require specimen blooms, the dates when the plants are stopped should vary according to the varieties. Generally speaking, the best time to stop most varieties for blooming at the end of October is from June 10 to June 15. As you require fairly dwarf specimens, cut the plants down to within 6 or 9 inches of the top of the pot, on about June 7. Place the plants (not too closely together) in a cold frame, and water the roots very carefully. Spray the plants very lightly overhead three or four times daily. Under this treatment the plants will break into growth quickly, when they may be removed in the open again. Pot them in their flowering pots when the new growths are from 1 to 2 inches in length, retaining only as many shoots as are required for blooming. In nearly every instance the first bud that develops should be "taken," as this will develop into a good flower on a fairly dwarf plant. If you do not like to adopt the somewhat drastic method of cutting the plants down as advised, you may remove about 3 or 4 inches of the shoots now, and stop again at about the dates given above.

Striking Roses from Cuttings : *J. W.* There are several methods whereby you may raise a stock of own-root Roses. At the present time they may be struck under glass, either by means of a hot-bed or in a propagating frame fixed over the hot-water pipes, bottom heat being essential at the present time. The cuttings are made from growths that have just bloomed under glass, but it is useless to attempt to strike cuttings now from outdoor wood. The cuttings are made with two eyes or buds. Cut the wood close up to the lower eye with a sharp knife and remove the leaf stalk, retaining the latter to the upper eye. Dibble the cuttings around a 3½ inch pot in a compost consisting of sifted loam with a plentiful mixture of silver sand. If a hot-bed is used, put a few inches of cocoa-nut fibre on the manure, and when the strong heat is waning plunge the pots in the fibre. Spray the foliage each day, and carefully shade the cuttings from bright sun with scrim or newspaper. In about 5 weeks they will have roots, when they should be potted into small 60-size pots and grown on in a warm temperature until June, when they may be hardened off and planted out-of-doors. Cuttings may also be readily rooted under frames in July, and in the open ground in September; but we shall deal more fully with these details in our cultural hints upon Roses later.

Tomatos Diseased : *W. S.* and *J. H. A.* The Tomatos are injured by Mycosphærella citrullina or Tomato canker. The canker is present at the collar of the plant, which points to infection from the soil. Soil for growing Tomato seedlings should be sterilised by steam or by mixing with it a dusting of kainit.

Trapping Moles : *E. H. W.* Seeing that several of your mole traps have been sprung every night, we assume that you have set them in the main "runs" of the moles, but without success. Set the trap so that the "ring" is level with the base of the "run," and pack dry grass or moss firmly on either side of it so as to prevent the moles working past. If you exclude daylight from the "run" by covering it with soil you will probably succeed in ridding your kitchen garden of the pests. The great thing in this connection is to find the main runs, which generally lead to or from a ditch or other place containing moisture, and then keep the traps set for so long as moles are present. By this method we have known several moles to be caught in the same place, sometimes in one day.

Tulip Rose Gris de Lin : *S. D. & Son.* The stem is attacked by bacteria, and as the bulbs of such plants are also infected they should be burned.

Tulips Diseased : *W. J.* The plant is attacked by fungus Botrytis, which was present in the bulb when planted; hence sterilising the soil is of no avail. The bulbs should be thoroughly dusted with sulphur after they are lifted.

Unfruitful Fig : *C.* Seeing that the tree of White Marseilles planted alongside the unsatisfactory one of Negro Largo develops and ripens its fruit, it is rather difficult to account for the failure of the latter tree. Important points to be determined are whether the rooting space in the border is partitioned off from the space occupied by the White Marseilles in the same border, and whether the latter is well drained. The fruit turning yellow and dropping at the stage of growth mentioned in your note suggests that the drainage is bad and the soil excessively wet. The failure might also be caused by the tree making such strong growth as you describe. Pinch out the points of all strong-growing shoots when they are about 12 inches long; but allow the weaker growths to attain to a length of 18 inches before stopping them. If the drainage is perfect and the trees are fairly established in branch growth, the roots will require copious supplies of water.

Communications Received.—J. H. J.—J. D.—N. G.—W. W.—G. D. R.—S. E. C.—Hardworker—H. W.—Mrs. H. L. W.—E. B.—R. D.—L. W. B.—R. A. M.—H. N.—R. C. McL.—L. K., Switzerland—G. H. B.—E. L.—E. M.—C. T. D.—D. H.—Humani—Redman—A. B. S.—A. J. R.—J. W.—Thirty Years' Subscriber—G. G.—H. R.—A. A.—J. L.—B. W. I.—Trinidad—Correspondent—W. C.—Y. G.—J. R. J.—A. G.—W. J. D.—J. L.—W. B.—W. M. B.—E. C. P.—W. T.—A. Reader—E. H. S.

THE
Gardeners' Chronicle

No. 1,373—SATURDAY, April 19, 1913.

CONTENTS.

"Among the Hills" ...	256
Barr Memorial Cup ...	254
Books, notices of—	
Commercial Gardening	248
Books, sale of old ...	253
Chrysanthemums, potassium - permanganate for	253
Daffodils, prices of new	253
Egg train in North Wales	253
Fatal accident to a Kew Garden employee ...	254
Fernery, the	249
Florists' flowers—	
Marguerite Mrs. F. Sander	248
Planting Sweet Peas	248
Flowers, double... ...	252
Flowers in season ...	253
Ghent Quinquennial, the	253
Grape-growers, hints to	245
Heal, Mr. John	254
Leptospermum scoparium Nicholsii ...	255
L.C.C. Parks' Committee	253
Madryn Farm School	254
Manganese as a fertiliser	253
Movable greenhouses...	255
Obituary—	
Howell, A.	262
Spaeth, Ludwig ...	262
Orchid notes and gleanings—	
Dendrobiums at Belsize Court, Hampstead...	247
Epiphytic Orchids ...	247
Megaclinium elurneum...	246
Odontoglossum eximium, "Warnham Court" variety ...	246
Pinks, dwarf-growing ..	254
Plants which never grow up	255
Potatos, leaf-curl of ...	253
Rockery, the ideal ...	247
Rubber market, the ...	254
Societies—	
Cornwall Daffodil and Spring Flower ...	261
Hailstorm Insurance	261
Irish Gardeners' ...	261
Perpetual - flowering Carnation	260
Royal Caledonian Horticultural ...	260
Royal Horticultural	256
Royal Horticultural of Ireland	261
Selborne	254
Uppsala Horticultural	253
Royal Meteorological	253
Soil, the chemistry of the	253
Wart disease and deep cultivation	254
Week's work, the—	
Flower garden, the...	251
French garden, the...	250
Fruits under glass ...	251
Hardy fruit garden, the	251
Kitchen garden, the...	250
Orchid houses, the ...	250
Plants under glass ...	250

ILLUSTRATIONS.

Dianthus alpinus 248
D. cæsius 254
D. gelidus 247
D. glacialis 256
D. neglectus 255
D. frigidus and D. furcatus (Supplementary illustration).
Odontoglossum eximium, "Warnham Court" variety 246

HINTS TO GRAPE GROWERS.

MISHAPS IN THE VINERY.

In addition to the attacks of insect and fungous pests there are other mishaps likely to occur to Vines and Grapes unless the cultivator fully understands how they originate and takes measures to prevent their occurrence. Some are apt to be attributed to wrong causes, and amongst these is "Rust" on the berries.

This disfigurement is generally caused by a chill in the very early stages of the berry's formation. I had a house, 60 feet by 30 feet, of Muscat Vines, rapidly approaching the flowering stage. During my absence the sun suddenly came out brilliantly, and many of the flowers on half-a-dozen bunches shed their caps. The man in charge was a few minutes late in giving ventilation, the consequence being that the temperature rose rapidly, and moisture collected on the comparatively cold berries. When the ventilators were opened, much of the warm air rushed out, carrying the moisture with it, and the effect produced was something like what I am told happens if ether is placed on one's hand and allowed to evaporate. Those six bunches were the only ones to show any signs of rust. Rust may also be produced by sulphur on hot-water pipes, if the latter are heated sufficiently to produce an overdose of sulphurous acid, while the fruit is very young and tender; and in a later stage red spider or thrips will, if present, mark the berries and cause a kind of rust.

Scorching of the tips of young, vigorous Vines is also caused by ventilating too late. If the house faces the east, and has a steep roof with large panes of glass, and there is no ventilation given before 6 o'clock on a bright midsummer morning, the so-called scorching of the shoots is almost certain to follow when ventilation is given. Here also the cause is a chill.

Scalded berries are generally supposed to be caused in the same way, but this is not so. Scalding does not take place in the morning, and shaded berries are affected in the same way as those not shaded. It can also be produced without sunshine, but is impossible with a temperature below 80°. With a rise of 10° above this during the latter half of the stoning period this trouble is almost certain to occur. There was one day last summer when the outside temperature approached 90°, and it was impossible to prevent some scalding where the Grapes were stoning, even though in some cases shading was applied. Some years ago painters were at work on the roof of a house containing Gros Colmar Vines, with the fruit at the critical period of stoning. The side the men were working on had the ventilators closed in order that ladders might be placed on the roof, while the opposite side had all the ventilation it was possible to give on the top, which was sufficient without opening the doors or lower ventilators, as the day was not one of the hottest. On my return from a journey the men had shifted from one side to the other, and had closed the ventilators without opening the opposite ones, the consequence being that many berries were scalded.

I have known cases in which a large number of berries were scalded in a house heated to 90° at night, during the stoning period, in order to raise sulphur fumes for killing red spider.

When the second swelling commences, if there is occasion to hurry on the crop, a considerably higher temperature than 80° may be indulged in, although the better class of black Grapes colour best in a moderate temperature with plenty of ventilation on warm days.

So far I have related only proved facts; now for a little theory. The skin, for some reason unknown to me, will not expand during the stoning period; at least, I have only been able to detect an increase of one-sixteenth of an inch in the diameter of the berry in twenty-six days, while previous to stoning they increased to that extent in forty-eight hours. The extra heat will, I presume, cause the liquids in the berries to expand, and rupture of the cell walls is the sequel. To return to facts, there is another kind of scalding caused in a different way, and in this case it is real scalding. In order to hurry on the ripening and colouring of Muscats, the bunches are sometimes laid bare, by having some of the leaves tied back, or the bunches may be raised above the leaves. If the sun comes out very hot soon after this is done, while the skin is tender from being in a partially shaded position, scalding is very apt to occur, even during the second swelling, but the appearance of the berries is different from that caused by the scalding previously described. They have a kind of parboiled appearance on the parts affected, which sometimes extend all over the berries, and if they remain sufficiently long they will dry up like raisins. A piece of tissue paper placed temporarily over some of the choicer bunches will prevent this, but it should not remain there, or the colouring of the fruit will be defective.

Aerial Roots.

When these appear they show that all is not right with the proper roots. It may be that the border is too wet or too dry, too light in texture or too heavy, not sufficiently aerated or too cold (perhaps through having a thick coating of manure). If the border is outside, the best roots may have been sacrificed for the sake of a crop of early Lettuces, or they may have travelled 30 or 40 yards away and have come in contact with the hoe when the Potatos were earthed up, although the cultivator is under the impression that they are confined to the inside of the house, or to the prepared border.

Anything which militates against the well-being of the terrestrial roots will induce the plants to endeavour to obtain supplies from another source.

But the aerial roots are a sorry substitute, for they cannot supply the necessary minerals, therefore the cause of their presence should be sought out and put an end to. Meanwhile, they should be persistently rubbed off, and where the Vines are dormant the parts where the air roots appeared should be plastered with undiluted soft soap, which will prevent their appearance the following season. The old bark must not be removed, or the soap will injure the inner bark, and the soap should not be placed near the buds. When these roots have once appeared they will grow again, if not checked, even though the defects in the border have been removed, therefore drastic measures should be taken.

Warted Leaves.

These are produced by an attempt of the plants to make up for a want of texture in the leaves.

If there is an insufficiency of stored material in the autumn, or if the leaves are forced out too fast for the roots to supply them with food, there is, in a later stage, when the soil becomes warmer and the roots active, with, at the same time a more congenial atmosphere and more light from the sun, an endeavour to make up the deficiency. For some reason, which I cannot explain (it may be owing to the position of the stomata), the additional material is not spread regularly over the whole surface, but is in patches. The remedy, obviously, is to give the plants more rational treatment.

Shanking.

Mal-nutrition is the cause of shanking which happens to young Vines as well as to the aged, and whether the roots are in rich or poor compost. You may have all the necessary materials in the soil and yet the Vines may be starved. If young Vines are grown too vigorously the stems are not properly built up; the cells of which these stems mainly consist are large and long, and do not become filled. They partially collapse, and the stems become flattened when the wood ripens. Old Vines will bear, and need more nitrogenous matter than young ones. Borders are often made too rich in nitrogen, and their very richness produces starvation. Potash, phosphates and lime are the chief requisites when anything worth calling loam is used for forming a border, as there is always sufficient vegetable matter in the soil to decompose and supply nitrogen for a time, and the phosphates especially must be in an available form. A chemist can tell us a great deal about the soil, but he cannot tell all. The practical man can tell some

thing about its mechanical nature; he can also learn something by noticing the kind of plants which naturally flourish on it. Still, there is always something to be learned when you come to put this theoretical knowledge into practical application. Some soils which appear light and sandy will bind together and become hard baked on the surface, while on the other hand a good-looking loamy soil may drain too quickly. Crushed bones, as they are generally used, are of very little use to supply phosphates in most of the soils we have to deal with. I have examined them after they have been in the soil seventeen years, and they were very little decomposed. On the other hand, I had at one time to deal with a soil in which half-inch bones would almost disappear in twelve months. This particular soil was naturally deficient in lime. Rhododendrons would flourish in it, though it was comparatively heavy, common Box did not like it, and the water from the spring was softer than rain water. I have thought it might be lime-hunger which caused the bones to be consumed so rapidly. We are told that plants grown on a marble slab will partly consume that slab for the sake of its lime if they are short of a supply. Well, then, the safest way to apply phosphates permanently to a fruit border is to have the material finely ground, as it is in basic slag or bone meal. I prefer steamed bone flour to mix with the soil, and a further supply can be added on the surface at any time.

Then, if we depend on chemical manures when a heavy crop of fruit requires immediate assistance, we must bear in mind that there can be no such thing as a perfect mixture on the market. It is possible to make such a mixture, but the necessary ingredients are too limited for such an enormous supply as is necessary for present-day requirements. In the fertilisers on the market some of the ingredients are quickly exhausted, while others are more lasting. Therefore, it is advisable to apply doses rather under than over those recommended by the vendors, and supplement these by an occasional small application of nitrate of soda, nitrate of potash, or sulphate of ammonia.

But all this careful attention to the soil is of little use if the leaves of the plant are neglected or wrongly treated, for on them depend the whole working of the machinery. If many of the leaves are removed at any time, if insects are allowed to devour them, if they are pressed up against the glass to be alternately frozen and scorched, if a great number are shaded by others growing above them, if indeed from any cause, perfect feeding and assimilation are prevented, the plants and the fruits also will soon show signs of suffering. *Wm. Taylor.*



F.G. 107.—ODONTOGLOSSUM EXIMIUM "WARNHAM COURT VARIETY." (NAT. SIZE.)

ORCHID NOTES AND CLEANINGS.

ODONTOGLOSSUM EXIMIUM "WARNHAM COURT VARIETY."

OUR illustration in fig. 107 represents this beautiful hybrid, for which C. J. Lucas, Esq., Warnham Court, Horsham (gr. Mr. Duncan), received a First Class Certificate at the Royal Horticultural Society's meeting on April 1 last. The flowers are reddish-purple with white margin. They afford a fine example of a florist's improvement on the famous blotched forms of Odontoglossum crispum by crossing one of these latter (Luciani) with O. ardentissimum (Crispum × O. Pescatorei).

MEGACLINIUM EBURNEUM, PFITZER.

THIS rare and curious species has flowered in the Hon. N. C. Rothschild's gardens, Ashton Wold, Oundle (gr. Mr. C. Wright), the plant having been received with others from West Africa. The pseudo-bulbs are angular and furnished with evergreen foliage. The flattened rachis is whitish, and bears on each side a closely-arranged row of cream-white flowers. A former record states that it flowered from a clump, the other part of which proved to be Megaclinium

Bufo, and it is believed that that species will also occur in the small lot imported, together with other species, as the pseudo-bulbs are very dissimilar.

DENDROBIUMS AT BELSIZE COURT, HAMPSTEAD.

It is now an established fact that Orchids will grow and flower in or near large towns, if properly treated, better than any other class of plants, especially for winter and spring flowering. In Mrs. Bergheim's garden (gr. Mr. H. A. Page), a good display of flowers has been maintained throughout the winter, and for some time past the Dendrobiums have made a fine show. A large specimen of the pure white D. infundibulum has over 60 large blooms, D. Jamesianum, the varieties of D. nobile, including a good example of the pure white form, D. luteolum, D. Falconeri, D. aggregatum (with 8 spikes), and other species being also specially fine. D. Wardianum is well grown, and the manner of displaying the flowers so as to present an effective head is noteworthy. The strongest plants have three or four new growths about 4 feet in height, and some furnished with flowers for two-thirds of their length. These are trained upwards for half their height, and the remaining half curved downward, forming an oval specimen much more beautiful than when the stems are trained upright, or allowed to droop as is their habit if not trained. A good display of Odontoglossums and Masdevallias, Cattleya Schroderæ and others are in bloom, also many interesting botanical species.

EPIPHYTIC ORCHIDS.

The current number of the R.H.S. *Journal*—which is of more than ordinary interest—contains full reports of the papers contributed to the Orchid Conference and of the discussions to which the papers gave rise.

Of these contributions, that which is likely to be of the greatest interest to those in charge of Orchid houses is Mr. Alexander's paper on "Some Epiphytic Orchids." Mr. Alexander has achieved such remarkable success in the cultivation of difficult Orchids at Westonbirt, that his advice and opinions may well be looked upon as authoritative.

He suggests that many of the failures in the cultivation of the epiphytic Orchids are traceable to lack of sufficient light. Where the amount of light provided is insufficient, the plants may do well enough with respect to their vegetative members, but their flowers are poor and evanescent. So convinced is Mr. Alexander of this, that, as mentioned by Sir George Holford in the concluding session of the conference, the new houses at Westonbirt have been erected, on his express recommendation, in an open field removed from any shading of trees.

Where, owing to the situation of the houses, it is impossible to give the plants sufficient light, something may be done to remedy the defect by increasing the supply of air. The result will be, necessarily, slower growth, but that must be accepted as inevitable; and, indeed, any attempt to hurry plants grown in light of insufficient intensity will only lead to complete failure.

As a logical conclusion from his views on the needs of Orchids for as much light as possible, Mr. Alexander recommends the disuse of fixed shading, and urges that the blinds should be used only to diffuse and not to shut off light. Overshading is a frequent cause of failure.

Not only is a high light intensity necessary, but full and free ventilation is also an essential to success with the difficult epiphytes. Mr. Alexander points out that the natural habitat of such Orchids as Vanda cœrulea is an open one freely exposed to the air, and he holds that this natural condition should be imitated by providing a good supply of air—without draught both by day and night

As the light in which these plants are grown is often too low, so the temperature is apt to be too high, and Mr. Alexander maintains that many of these Orchids would do better if they were kept under cooler conditions than are apt to be provided.

He is not a stickler for stated temperatures, believing that success may be achieved more readily by varying the temperature judiciously, and in accordance with other climatic conditions, than by a rigid adherence to rules.

A third source of failure is too much water at the roots. As compared with terrestrial Orchids, epiphytes—except at the height of their growing period—require but little water at the roots. If light and air are plentiful the danger from excess of water is reduced, for in these circumstances the plants are able to take up larger quantities of water than is the case when the light is low and the air stagnant.

In support of his conclusions that over-watering is deleterious, Mr. Alexander points out that in nine cases out of ten the season's growth of epiphytic Orchids precedes root action by a longer or shorter period. This being the case, overwatering is both useless and apt to bring about decay of the roots. Rain water should be given wherever possible, and manuring should not be resorted to; for the plants are slow growers and have ample time to obtain the relatively small quantities of mineral substances which are all they require for their nutrition.

Lastly, he points out that the term "resting period" has given rise to misconceptions which lead to failure. The term "rest" should not be taken to imply that the plant is to be allowed to shrivel periodically by being deprived altogether of water. During the resting period, which occurs in these Orchids more or less during the winter months, the temperature is low and evaporation little, and it is then that the plants require less atmospheric moisture and less water at the roots. Different plants must be treated differently during this period, and those of the distichous-leaved section require more frequent watering during their inactive period than do any of the pseudobulbous kinds. Vandas, Phalænopsis and similar kinds require just sufficient moisture in the rooting material to keep the foliage plump and firm.

If over-dried in winter such plants will often lose many of their leaves when they resume growth in the spring. The impression in the minds of some growers that a severe drying of Cattleyas, Lælias, Dendrobiums and other pseudobulbous kinds is necessary in order to induce them to flower is characterised by Mr. Alexander as a mistake.

To sum up, Mr. Alexander's advice is "more light and air, less heat and moisture." To these we must add others, omitted by the writer, and these are the acuteness of observation and the resourcefulness such as are possessed by Mr. Alexander himself. We recommend all growers of Orchids to read his valuable and suggestive paper.



Fig. 108.—DIANTHUS GELIDUS.

(See page 255.)

THE IDEAL ROCKERY: ITS CONSTRUCTION.

(*Continued from p. 178.*)

IV.—Choosing the Stones.

Having settled on the plan of the rockery and prepared a rough sketch, the next step is to select the stones. The type of stone employed will have an influence on the final appearance of the rockery, and in consequence should bear a direct relation to the plan. For instance, if the only kind of stone available consists of more or less rounded, cobbley sandstones, worn by water, the builder is at once limited to a lower scheme than if he had at command plenty of craggy, angular limestone. I wish to draw no unfavourable comparisons between types of stone which might probably be equally beautiful and useful, but the material at hand will have an influence on the height and certain particulars of contour of the rockery. The methods of "laying" mountain limestone, Kentish rag, yellow sandstone, gritstone or Old Red sandstone are as widely different as the respective appearances of these commonly used rockery mediums. There is something in using the "stone of the district"—if this be anything approaching good, and it is our own fault if we cannot find the suitable way of placing local stone, for it can be learned in the fields, on the roadside or streamside, or even in the quarry

Generally speaking, the following points should be looked for in stone for rock gardens: (1) Beautiful appearance; (2) composition as hard and durable as possible—so as to resist weathering by rain and frost—freedom from oxide of iron sufficiently to cause no injury to

plant life; (4) blocks of a sufficient size to be effective.

It is important for the stone to be hard, otherwise particles may scale off, and certain of the plants at least may resent being top-dressed by particles of rock quite foreign to their requirements. Even should there be no extensive scaling off of particles, undesirable properties such as iron or lime might be gradually imparted in solution by soft stone to the soil—making all the difference to the health of the plants. I have heard and seen it put forth that limestone should not be used for rockeries. If by limestone is meant one of the many soft kinds most commonly met with I quite agree, but if a hard limestone be used we should have to go far for a more satisfactory stone. Of the many rocks, mountain limestone is perhaps the best all-round "Alpine" stone found in England, especially when it is well weathered and has assumed the beautiful shapes and markings almost always found in the pieces that have been for hundreds of years above ground. It is commonly met with in the Swiss Alps, and in very large quantities in Britain, beds of great thickness occurring in Derbyshire and Yorkshire. That from Yorkshire is the best of all, being of extreme hardness, and not much affected by the severest frost; for, coming as it does from a great height above sea level, it has already withstood more severe weather than it is likely to meet with in the lowlands. It is so hard that it need not be considered as a limestone at all when planting; indeed, peat-loving plants are often its immediate neighbours, and the soil in which it is embedded is for the most part fibrous peat. Millstone grit is found over a large part of Devonshire, Yorkshire, Lancashire, and Durham. It is a very suitable stone for the purpose, especially in weathered blocks, and although in nature it is generally indicative of a naturally cold and barren soil, it makes a picturesque rockery. Old Red sandstone occurs in a few places in Wales, the Lowlands of Scotland, in Hereford and Westmorland. Although of a most pleasing colour as a rule, I do not think the red kinds are quite so suitable for plants as the ordinary sandstones. I may be wrong in this point, especially if the stone is very hard. As a rule sandstone, either new or old, crumbles freely. Oolites include very many kinds and qualities of stone, some bad, others good. A few of the best for our purpose are Purbeck limestone, the calcareous sandstone of Portland and coral rag. Certain forms of Oolite rocks are almost as good as any stone for the plants, although generally there is nothing very striking in their appearance. It will thus be seen that these rocks are more useful broken up and used as grit, on and in the soil, merely for the benefit of the plants. These are a few of the more desirable types of stone for rockery building, but needless to say there are countless varieties and sub-varieties of these main types, which need not concern us so long as we know the main qualities to aim for in the choice of stones. Weathered stone is, of course, the most in request, and where this is obtainable it is an unnecessary exercise of patience to wait for the quarried stones to weather. The most unsuitable rocks are the soft calcareous sandstones, and newly-quarried magnesian limestones. If the constituents of a particular stone are unknown, it will doubtless be an advantage to have it analysed, although generally we may gather from the type and quality of herbage it supports in nature whether it is likely to be suitable for a rockery or not. *J. Wood, Boston Spa.*



FIG. 109.—DIANTHUS ALPINUS.

(See page 255.)

FLORISTS' FLOWERS.

MARGUERITE MRS. F. SANDER.

THIS very distinct variety of Chrysanthemum frutescens made its first appearance in this country at the Temple Flower Show in 1910, when an Award of Merit was bestowed upon it. At that time it was somewhat criticised on account of the apparent weakness of the flower stem, but its behaviour under cultivation has proved that this is not its natural character. It is very suitable for the embellishment of the greenhouse, for summer bedding, and for furnishing cut blooms. Some fine examples were noted last summer at Hampton Court, and a bed of it at Kew gained many admirers. It has quite superseded the other double or semi-double forms of Marguerite, to which it is in every way superior. The flowers are large, and the centre is quite filled up, as in the Anemone-flowered Chrysanthemums. In habit and foliage it more nearly resembles the typical Chrysanthemum frutescens than do the other kinds, and so far as my experience extends it does not appear to be so much affected by the leaf-miner as are the older varieties. *W. T.*

PLANTING SWEET PEAS.

DURING the next two or three weeks all growers of Sweet Peas will be busy transferring the plants from their first pots or boxes to the open ground. If the soil is in a good, workable condition, and the plants have been hardened to a certain extent by means of plenty of fresh air, frost is not likely to injure them. Plenty of space should be left between the plants in their permanent quarters, and, before planting out, the roots should be shaken almost entirely free of soil. This is a very debatable point, and many growers dispute the advantage of such a procedure; nevertheless, it is advantageous, and conduces to hardiness. Especially is this the case with autumn-sown plants, which are apt to make more root than those sown in the spring. Deep, wide holes should be dug for the reception of the plants, and the roots spread out carefully. The holes should then be filled in with fine soil, pressed down firmly, especially round the collar of each plant. The whole of the root comes thus in contact with fresh, clean soil, and growth proceeds without a check. If the plants are put in with the old ball of soil still clinging to the root, they may at first seem to develop quite as well as by the other method; but the roots are unable properly to pierce the new soil, and frequently turn yellow, especially in dry weather.

Spring-sown plants have naturally much less root than autumn-sown ones, and may be put in with a dibber, though this method is hardly to be recommended, especially if fine, large blooms are desired. A little care and trouble in planting will be amply repaid at flowering time.

It is, perhaps, superfluous to add that spring-sown plants, being small and tender in every way, are liable to attack by birds and slugs, which must be guarded against. *T. Stevenson.*

NOTICES OF BOOKS.

COMMERCIAL GARDENING.*

MR. JOHN WEATHERS, as editor, and the Gresham Publishing Co., as publishers, may be congratulated upon having brought out a very successful work on *Commercial Gardening*. In four volumes, super-royal octavo, of about 240 pages each, strongly bound in decorated cloth, well printed, and profusely and admirably illustrated, the work stands out even at first sight as one of substantial importance. Examination confirms the favourable impression made by the appearance of the volumes, as it shows that the work is by far the most comprehensive one on its subject ever published in this country. So comprehensive, indeed, is it that it might fairly have been entitled the *Encyclopaedia of Commercial Gardening*, except for the arrangement of its contents. In preparing it the editor has been ably assisted by about twenty authorities on the several branches of the subject, mostly men who are or have been engaged in the industry which they describe. There are just twenty contributors, including the editor, in the list setting forth the names indicated by the initials with which most of the articles are signed; but some of the longest and most important articles or compilations are unsigned.

As usually happens in works of an encyclopædic character, the apportionment of space to the several divisions of the subject is not altogether in proportion to their respective importance. Some contributors are always apt to be profuse, while others are disposed to shirk details more or less; and it unfortunately happens that the practical man, whose descriptions and recommendations, based mainly on experience, are particularly valuable, is, as a rule, more disposed than the professional writer to fall into the latter error, though he is not alone in this respect. In the opening section of the first volume, "General Aspects of Commercial Gardening," Mr. George Gordon sets out to give

* Commercial Gardening. Edited by John Weathers. 4 vols., price 9s. each vol., net. Gresham Publishing Company, London.

the several divisions of the horticultural trade, but fails to mention fruit growing except incidentally as engaged in by some market gardeners, while he devotes one-third of his space to the Japanese garden. By the way, Mr. Gordon differentiates between the "market gardener" and the "market grower," a distinction which the editor, judging from the sub-title of the work, appears to endorse. The former term is applied to the grower of fruit, vegetables and flowers in the open, and the latter to the producer under glass for market. The distinction is not a happy one, as every market gardener is a market grower. A more distinctive division would be that of the market gardener, the fruit farmer, and the nurseryman, though this is not perfect, as the first often grows fruit as well as vegetables, and one class of nurserymen consists of producers of trees, shrubs, and flowers in the open mainly.

The second section, "The Science of Plant Growing," is admirably and comprehensively written by Mr. John Fraser, and instructively illustrated. This is followed by another excellent article on "Methods of Propagation," including budding and grafting, by the editor. It is not clear whether the capital section on "The Science of the Soil," or only one of the several sub-sections, is by the same author. It covers the living organisations of the land and soil sterilisation and electrification, while the last sub-section on soil analysis is signed "C. P. C.," initials not given in the list of contributors. Mr. Weathers also deals well with "Manures and Manuring."

The unsigned article on "Insect Pests" is valuable for its comprehensive list and its numerous illustrations; but there are some curious recommendations on the subject of remedies. For example, as a remedy for the Apple aphis and Apple sucker, the instruction is to "syringe with lime and salt or nicotine and quassia solutions." Of course, lime and salt should be used only on dormant trees. Again, for the codlin moth caterpillar the instruction is to "spray with Paris green, arsenate of lead, etc., when trees are in bloom," as if both these poisons and possibly others were to be used in combination, and regardless of the poisoning of bees and other pollen distributors. The usual and proper instruction is to spray just after the petals of the blossom have fallen. In the corresponding section on "Fungoid Diseases of Fruit Trees," also unsigned, the sufferer from Apple scab is advised to spray with "hot" Bordeaux or liver of sulphur solutions. The former at least is apt enough to scorch the foliage, even when cold, and what damage it would cause if applied when hot can only be imagined. Moreover, a further instruction is to "cultivate soil with hoe," though it is not clear what possible effect hoeing can have upon soil. In "Fungicides and Insecticides," also unsigned, the proportions of Bordeaux mixture are put at 2 lbs. copper sulphate and 1 lb. lime to 10 gallons of water. This is equivalent to 20 lbs. of the former ingredient to 100 gallons of water, or more than twice as much as should ever be applied to fruit trees in foliage. Similarly excessive, to a three-fold extent, is 1 lb. of soft soap to 4 gallons of water, or 25 lbs. to 100 gallons for aphis.

The nurseryman who desires to save money by constructing his own glasshouses will find complete and clear directions in the last section of Vol. 1, on "Glasshouse Building," by Mr. Wilfrid M. Bear, who has had much experience in the work on his own account. By the way, in the list of contributors he is erroneously named "Wilfrid E. Bear," and his initials put as "W. E. B.," by which a senior member of his family is known.

The second volume opens with a comprehensive section of 121 pages on "Hardy and Half-Hardy Plants, Bulbs and Flowers," not signed, followed by another unsigned article on "Stove and Greenhouse Plants and Flowers." The article on ferns is signed "A. J. H.," which probably should be "A. J. B.," for A. J. Bridges, nurseryman. These three articles fill the volume, the first two being very long and well illustrated. The third volume is almost entirely devoted to fruit, many of the articles being from the capable pens of Mr. W. J. Lobjoit and Mr. James Udale, while the insect pests and diseases of the several fruits are treated by the well-known specialists, Mr. F. V. Theobald and Mr. George Massee. In the general article on "Commercial Fruit Growing," Mr. Lobjoit discourses shrewdly and vigorously upon the difficulty of obtaining land for the industry, with a right to compensation for planting, or other valuable improvements on quitting the holding, in the course of which he exposes the lop-sided character of a plan under which the landlord provides trees and bushes, the tenant planting, with a rising scale of annual payment in addition to the ordinary rent after the first four years for trees and the first two for bushes. Mr. Udale follows with an interesting article on "Fruit Growing in Worcestershire," while Mr. Hodge, of Blairgowrie, deals with the industry in Scotland, and Sir F. W. Moore, M.A., with its operation in Ireland. Mr. Massee writes too briefly in the general article on diseases of fruit caused by fungi, etc., and his subsequent articles appended to those of other writers on the cultivation of different varieties of fruit leave readers desirous of more of the details, in the supply of which he is characteristically chary. By the way, it is astonishing to find so high an authority recommending the painting of canker wounds with gas tar instead of Stockholm tar, as the former rots green wood, although it kills the canker fungus. The editor and Mr. Lobjoit deal with Apples, while Mr. Theobald writes on their insect pests with his customary thoroughness, although in a necessarily condensed form for so wide a subject. Mr. Lobjoit is the writer of most of the articles on other tree and bush fruits, the specialists on pests and diseases named above adding their information and instructions. The fungous diseases of Plums and Currants are not comprehensively treated. Mr. Arthur Amos writes well on the cultivation of Cherries, and Mr. A. J. Bridges on Strawberries. Articles on Figs, Grapes and Melons are not signed.

The wide subject of "Vegetable Growing for Market" occupies the main portion of the last volume, mostly written by Mr. Lobjoit, Mr. Udale, and the editor. The last treats of Potatos fully and ably, and apparently is the author of the section on sweet herbs and small salads, while Mr. Percy A. Cragg writes on Mushrooms.

The concluding section is on "French Gardening and Intensive Cultivation," a subject which the editor has made his own.

THE FERNERY.

SPRING TREATMENT OF HARDY BRITISH FERNS.

After a long rest from the autumn to the present time our hardy native Ferns are now beginning to resume activity, and if we examine them closely we shall find their crowns are swelling, and in sheltered places the fronds will be seen to be actually rising—an indication that the time has arrived when it is advisable to take in hand any rearrangement, such as division, transplanting, or re-potting, which may appear to be necessary. If this be done at once the risk is avoided of damaging the new growth, while after the long rest the tendency to grow is so vigorous that practically no check is experienced, and the new root system which is now forming—since every new crop of fronds engenders its own from the frond bases—will get a good hold upon the soil in good time for the arduous work of the coming season. They also get the benefit of the cool air and showers of April, while if such operations be left until the plants have fairly started into growth, and the fronds are well in evidence, they not only lose these advantages, but are heavily handicapped by higher temperature and greater risk of drought, while it is clear that when active growth is fully started the roots have far more to do and are much more likely to be overstrained and damaged by removal. The young fronds, too, are very easily damaged by handling, and this means disfigurement for the season. It will be found on examination that the Ferns fall, roughly, into two categories, viz., the evergreens, which do not die down in the autumn, but maintain their frondage through the winter. These are represented by the common Polypody, the Hartstongue, the Blechnum, the Shield Fern or Polystichum, the Spleenworts, and, to some extent, by the hard form of the Male Fern (Lastrea or Buckler Fern), and one or two of the same genus. The other category, or the deciduous species, lose all their fronds in the autumn, and are consequently only represented in the winter by their caudices or root-stocks. To this category belong the Lady Ferns, the Royal Fern, most of the Buckler Ferns, the Bladder Ferns (Cystopteris), with one exception, and the three Polypodies, the Oak, Beech and Limestone. In the open, as in their native habitats, we find all these at this season protected by the débris of the dead fronds, and if these for the sake of tidiness be cleared away it is well to mulch the exposed crowns with some old leaves. With regard to the evergreens, it is not advisable to remove the fronds, since, apart from the shelter they afford to the nascent new growth, there is no doubt that their still living chlorophyll plays an important rôle in the development of roots and fronds. Examination will show that many or most of the plants originally planted as single specimens may have developed into clumps of several, and therefore to obtain the finest development it is well to divide the clumps and to maintain as far as possible the specimens as single crowns. As in clumps which are formed by lateral buds produced at the bases of the old crowns the individual plants have naturally to fight with each other for existence, the result is a general diminution in size, while with a single crown free from competition with its own offspring the fronds can grow much larger, while any varietal character is much enhanced. The Ferns which form central crowns should be dug up bodily, when it will be seen that each member of the clump is really an independent individual which can be prised off or pulled away with its own root system, and only needs planting to establish itself at once. Those with creeping root-stocks like the Polypodies can be propagated if a piece of such root-stock, bearing several fronds and a growing point, be severed and planted shallowly in good open compost. As regards soil, a good, rather lumpy compost of loam and leaf-mould suits all species, and crown-formers should be planted with their crowns just level with the soil and not buried like bulbs. In pot culture it is well to provide good drainage, as, although Ferns like moisture, they resent stagnancy. Old-established pot plants with their pots packed with roots may, however, stand in saucers without harm. We may now deal with the question of the best Ferns to grow. In thousands of gardens we see many more thousands of Ferns growing, and yet we find the vast majority to fall into five or six species only, and all of the common or weed type. Pretty enough, we grant, but "not a patch" upon what an expert would recommend. In a Fern collection proper not one of these would figure, but in their place we should see hundreds of the far more beautiful "sports" into which these few species and others have been transformed. Suffice it to say that many exist in cultivation, and that it is only necessary to send a request to such of the trade as make them a specialty, in order to acquire at a very small outlay a few dozen varieties which will speedily convert the "weed" cultivator into a Fern-lover worthy of the name. For the beginner, ignorant of the names, we would suggest leaving the choice to the trade, merely ordering a dozen or so of good varieties, tasselled, plumose, frilled and fringed of Lastrea, Lady Fern, Hartstongue, Shield Fern, Polypody, by way of a start, the rest would inevitably follow

The Week's Work.

THE ORCHID HOUSES.

By W. H. WHITE, Grower to Sir TREVOR LAWRENCE, Bart., Burford, Dorking.

MAXILLARIA.—Examine plants of Maxillaria to ascertain if any of them require larger pots; if re-potting is not necessary remove some of the exhausted or decayed potting materials, and replenish with sweet compost. Such species as M. Sanderiana, M. Hubschii, M. fuscata and M. luteo-alba which are in bloom or just showing their flower spikes, should not be re-potted until after the flowers have faded. Maxillarias develop, as a rule, numerous small roots, and these require plenty of surface space to ramify in. They may be cultivated in pots or shallow pans rather more than half filled with material for drainage. The soil may consist of equal parts Osmunda fibre and Sphagnum-moss cut into small portions, with sufficient small crocks added to make the compost very porous, for although Maxillarias require an abundance of water when growing actively the roots soon decay in a close and stagnant soil. Owing to the flower spikes of M. Sanderiana being decumbent, like those of Stanhopea (sometimes they grow semi-erect), the plant should be placed in a teak wood basket, using no crocks for drainage, but spreading instead a loose layer of coarse Osmunda fibre over the bottom of the receptacle. Shade re-potted plants from strong sunshine, and afford only sufficient water to keep the Sphagnum-moss on the surface healthy, but when the growth is active and roots plentiful the supply of moisture at the roots should be liberal, and the atmosphere should also be very moist. The following species of Maxillaria succeed well in a cool, shady part of the intermediate house: M. Sanderiana, M. Hubschii, M. fuscata, M. pumila, M. arachnites, M. luteo-alba, M. grandiflora, M. venusta, M. tenuifolia, M. picta, M. Amesiana, M. Lindenii, M. præstans, M. phœnicanthera, M. Turneri, M. nigrescens, M. setigera, M. lepidota, M. elegantula, M. dichroma, M. Houtteana and M. callichroma. Fortunately, insect pests rarely attack the leaves of these plants.

PLEIONE.—Plants of Pleione maculata and P. lagenaria accommodated in the Cattleya or intermediate house are growing fast, and require plenty of water at the roots. As the leaves develop, an occasional watering with weak liquid cow manure will be beneficial. Light sprayings overhead several times daily during fine weather will help to keep the foliage clean and healthy. The cooler-growing P. humilis, P. Hookeriana and P. yunnanense may be re-potted in similar soil to that recommended for Calanthes. Suspend the plants in a light position close up to the roof-glass in the Odontoglossum house, and keep them well supplied with water at all times.

PLANTS UNDER GLASS.

By F. JENNINGS, Gardener to the DUKE OF DEVONSHIRE, Chatsworth, Derbyshire.

ERANTHEMUM PULCHELLUM.—This stove plant is valuable on account of its beautiful blue flowers which are produced in winter and early spring. A stock may be raised from cuttings inserted now, but if large specimens are required, old plants should be potted and grown on. Suitable shoots for cuttings may be obtained from plants that have finished flowering: these should be pruned severely and potted. Plant the cuttings in soil composed of rich loam, peat and leaf-mould in equal parts, with coarse sand and a small quantity of wood-ashes added Grow the plants in a stove or warm house as near to the roof-glass as convenient. Cuttings taken from the old plants will root freely under a bell-glass or frame provided with brisk bottom heat; they should be inserted in 60-size pots filled with fine sifted peat and sand. Afford them plenty of water when they are well rooted, and allow them to flower in the stove. Eranthemum pulchellum will flower well when planted out in a warm conservatory.

EUPATORIUM WEINMANNEANUM.—This useful variety of Eupatorium may be propagated now from cuttings which should be inserted according to the period at which the plants are required to flower. After the old plants have finished flowering they should be cut back and started in a warm house. This white, sweet-scented flower is useful for decorative work, and especially at Easter, when white flowers are in demand. Cuttings should be inserted about the first week in May, and will furnish plants for flowering at Easter: they should be taken in the usual manner, inserted in fine, sandy soil and rooted in a mild bottom heat. When rooted, pot the plants singly in 60-size pots and grow them on a shelf in a warm vinery or in a frame near to the roof-glass until they are well established, when the leading shoots should be stopped. Finally pot them in 8-inch pots, using a compost consisting of rich loam, cow manure, leaf-mould, coarse sand, fine bones and wood-ashes. When they have made plenty of roots, afford water liberally and feed with artificial manure and liquid stimulant made from dung. This Eupatorium should not be grown in a very high temperature or the shoots will grow weak and unable to support the flower-heads; a greenhouse or frame where plenty of air can be admitted during the summer will be suitable for its cultivation.

TREE CARNATIONS.—Plants propagated from cuttings rooted last autumn are ready for their final potting. It is advisable to secure all the growths to a small stake before the work of re-potting is done. The stronger plants should be placed in 7-inch pots and the weaker ones in pots a size smaller. Fumigate the plants on the evening previous to repotting them. The soil for this potting should be practically the same as that advised in a previous calendar for Carnations grown on benches. Pot the plants firmly, and place them in the most suitable house at disposal and thoroughly soak the roots with water. The night temperature should be 57° to 60°. Syringe the plants both night and morning. Where the stock is limited, the best of the one-year-old plants may be potted into receptacles one size larger; these will furnish good flowers next autumn and also produce good, strong, healthy shoots suitable for cuttings next autumn and spring. Plants rooted late in the season should be stopped, if this has not been done already.

THE KITCHEN GARDEN.

By JOHN DUNN, Foreman, Royal Gardens, Windsor.

BEET.—Make a small sowing of improved Globe variety, choosing a sheltered situation; the young roots will be available for the table about the end of June. This crop succeeds best on light, rich soils that have been manured previously for some other crop. Sow in shallow drills at one foot apart, and cover the seed with fine soil. Thin the plants to 6 inches apart in the row, when they are large enough for the work to be undertaken. Main-crop Beet should not be sown until the middle of May, for if sown too early the roots may grow large and coarse.

CABBAGE.—Stir the soil between the rows of autumn-planted Cabbages, and dust artificial manure lightly along the rows to favour the crop maturing as quickly as possible. Make fresh plantations as soon as the spring-sown plants are ready for transplanting. It is a much better practice to make frequent small plantations of Cabbage during the season than to allow the stocks to remain after the first cutting is over. At Frogmore we have plenty of spring Cabbages ready for cutting, and when these have been used the ground will be cleared and prepared as quickly as possible for some other crop. The varieties Milecross Marrow, and early Offenheim are grown largely here for early supplies; both are reliable sorts, and do not run to seed prematurely.

POTATOS.—Main-crop and late Potatos should be planted without delay, for the sets are starting into growth, and there is a danger that the sprouts may be injured if the planting is delayed. Notwithstanding that the ground was trenched or dug deeply during the winter, the soil should be stirred deeply again, and this is best done at the time of planting. Let the soil be thoroughly pulverised before it is placed over the sprouting shoots. The distance to allow between the rows will depend to a great extent on the variety. As a general rule main-crop Potatos should be allowed 30 inches between the rows, and 12 or 15 inches between the sets in the row. Of the numerous excellent varieties, I may select Windsor Castle, Duchess of Cornwall, The Factor, and Vere O'Brien, which is of recent introduction, and gave the best results at Frogmore last year.

ASPARAGUS.—In many cases the surface soil of the beds has been beaten down by the rains, and where this is the case the soil should be stirred lightly with the points of a digging fork to enable the young shoots to push through the ground without injury. A dressing of common salt may be applied afterwards with advantage. Seeds may be sown to furnish plants for future plantations in light, rich soil. Sow thinly in drills at 18 inches apart, and when the plants are a few inches high thin them to 6 inches apart. Nothing more will be necessary beyond hoeing the ground and keeping it free from weeds during the season. If it is intended to form fresh plantations the work should be accomplished before the plants have made much growth, otherwise they may suffer from the effects of dry weather.

BRUSSEL SPROUTS.—Brussel Sprouts raised under glass should be ready for pricking into nursery beds. Allow a space of 6 inches between them each way, so that a small hoe may be used freely in the rows to keep the ground clear of small weeds. No protection will be necessary if the plants have been properly hardened, and they should be ready to set out in their permanent quarters about the last week in May. Young Cauliflower plants raised from seed sown this spring should be treated in the same manner and planted on rich soil as soon as they are large enough. The ground for this crop can scarcely be too rich, and an open situation should be chosen. The plants must not be allowed to suffer from drought at any stage.

THE "FRENCH" GARDEN.

By PAUL AQUATIAS.

HOT-BEDS.—The inclement weather of the past fortnight has caused extra work among the hot-beds. It has been necessary to restrict the amount of ventilation because of the very cold winds, but should the weather improve take advantage of every favourable opportunity to admit air, as it is essential that the crops of Carrots, Turnips and Cauliflowers be hardened sufficiently before the frames and lights are removed early in May. These crops require plenty of moisture, and should be watered twice every week.

COLD BEDS.—The Lettuces Little Gott are ready for cutting. They are always the best produce of the season. If an extra good plant is noticed with a firm, flat head and outside leaves well spread out it may be left for seeding. Within 15 or 20 days a cross should be made on the head with the blade of a sharp knife to encourage the growth of the floral stem. The variety White Passion may now be grown in the open, removing all the frames to the Melon quarters. It is advisable to surround the beds with mats to shelter the plants for a few days from cold winds.

HOT-BEDS FOR CLOCHES.—The first batch of Cos Lettuces is ready for marketing; the heads are tied with raffia previous to pulling them to prevent breaking the leaves. To facilitate transferring the cloches from their present position to the batch set on the south side of the bed it is essential that a whole bed be first cleared of the first batch. When the Cos Lettuces have been pulled a Cauliflower is set in each place occupied by them on the outside rows only. The bed is cleaned and watered copiously before covering the second batch with the glass. A fortnight is allowed for the marketing of the first batch of Cos Lettuces, after which time the first bed of the second planting will continue to furnish a supply without interruption.

CUCUMBERS.—If there is no greenhouse accommodation for this crop, seeds may be inserted and treated as recommended for Melons. The germination and growth of Cucumbers is quicker than Melons, and the seedlings are potted at an earlier stage. They also require more care in watering and shading than Melons.

Melons.—The weather has not been very propitious to the plants set last fortnight, but they are now well established and no longer require shading in the day time. Place a mulch of long, strawy manure to prevent undue evaporation and to afford a soft resting-place for the fruits. Afford ventilation in bright weather, and water the plants if moisture is needed about 10 a.m. on a warm day, taking care not to wet the plants directly, but only the soil over the roots. All the frames from the Lettuces Passion should be placed in position without delay for the second batch of Melons before those from the Carrots and Turnips are at liberty next fortnight. Young Melon plants in the nursery beds require careful attention in regard to watering, ventilation and covering at night. They should be stopped as soon as the third leaf is fully developed.

Nursery Beds.—Make the first sowing of Cauliflowers for growing in the open; the plants will be available for planting in succession to the crops of Turnips and Carrots sown in the open. Seeds of Endive La Rouennaisse may be inserted preferably in the freshly made melon beds. Tomatos require ample ventilation during the day, and a little air may be admitted at night towards the end of the month to harden the plants and check their growth before they are planted finally. Beans sown in pots for planting in the open will require water once or twice weekly, and air may be given when the cotyledons appear.

FRUITS UNDER GLASS.

By James Whytock, Gardener to the Duke of Buccleuch, Dalkeith Palace, Midlothian.

Peaches and Nectarines.—The earliest pot plants bearing fruits which have finished swelling may be given a night temperature of 65°, or even a little higher on very mild nights, and on bright, sunny days the temperature may be allowed to rise to 80°, with a free circulation of air. The trees should be syringed early in the morning and when the house is closed in the afternoon, as a preventive of red spider. Twice daily they should be examined for water at the roots, and frequent waterings with manure water may be given them. Cardinal Nectarines will probably be the first to ripen; as they approach ripeness they should be exposed as much as possible to the light, and the atmosphere should be kept at once dry and in perfect circulation. The earliest fruits in the planted-out Peach house will now also have finished swelling, and should be finally thinned. If the trees are young and vigorous there may be left a fruit to every seven square inches of each tree; if the trees are old-established, then ten to twelve square inches will be better. The trees should be divested of all superfluous wood, leaving only such shoots as will be needed for next year's crop. These shoots should be at once tied to the trellis, excepting any that are extra gross, which may be removed to preserve an even distribution of sap. When the fruits are in the last stage of swelling they should be exposed to the air and sunshine as much as possible, pushing the leaves aside for this purpose, or even removing some. Large trees bearing full crops, and with their roots chiefly in an inside border, should be watered with manure water, and syringed twice daily. The day temperature, if the sun is warm, may be 80°, and the temperature at night 65°. These conditions should continue until the fruit shows signs of ripening, when the syringing must be stopped, and rather more ventilation given, keeping the atmosphere warm at the same time to develop colour and flavour.

Late Trees.—The latest Peach trees, growing in unheated houses, should by now have set their fruit, and the house may be kept closed for a time. When the days are bright and sunny but the nights cold the trees should be syringed only in the early morning, so that they may be quite dry again by the evening. When the sun is shining the houses should be closed early in the afternoon and the paths damped. If green fly should appear the trees must be either sprayed with an insecticide or the house fumigated. The first disbudding of the trees should be given attention, and if the fruits have set thickly the first thinning of clusters and badly placed fruits may now be carried out. The second thinning may be attended to when the fruits are the size of marbles, and the third one after the stoning stage. The borders should be watered inside; if the outside border is wet enough a top dressing of manure will be sufficient. If the soil is light, both artificial and farmyard manure may be used. For the inside border manure water should be used, and a covering of short stable manure over the whole of the border will be beneficial. The ventilation of the house should be very carefully regulated when cold winds prevail.

THE FLOWER GARDEN.

By Edward Harriss, Gardener to Lady Wantage, Lockinge, Berkshire.

General Work.—The work of clearing paths and roads of weeds, either by hoeing or placing weed killers on them, should be completed as soon as possible, and every favourable opportunity taken to make the gravel firm by rolling. Trim grass edgings neatly and renovate bare patches on lawns; sow seeds for the latter purpose now. The pruning of tender shrubs should be brought to a close and the shrubberies made tidy by hoeing the soil. Sow seeds of various kinds of plants suitable for associating with shrubs, first preparing the ground for the seed bed. Cover the seed with finely-sifted soil from the potting shed. Hoe the ground between spring-flowering occasionally, and remove dead foliage.

The Rock Garden.—Young plants which were raised from seeds or cuttings last year may be planted. Campanulas should be largely employed for summer effect; the new variety, Warley, is perhaps the most desirable of all. Geum Mrs. J. Bradshaw, which is easily propagated from seed, makes a bold subject when planted in clumps. When planted in positions which provide a fairly deep root-run this beautiful Geum flowers all through the summer. It is also very useful and effective when employed in masses in the mixed border. Where small, choice Alpines are planted traps should be laid for slugs, which are unusually numerous this season.

Summer Bedding Plants.—The plants will require constant attention from now onwards until the time for bedding out arrives. The more forward specimens are large enough for placing in cold frames or temporary shelters, thus making more room for others which are not so far advanced. An occasional application of diluted liquid manure will be beneficial to plants which are well rooted. Standard Heliotropes, Pelargoniums and Fuchsias may be grown in a cool house for a week or two longer, when they may be removed to a sheltered position out-of-doors. Standards of Veronica Andersonii will be safe now in the open if they are placed under a wall facing south for protection. Pelargoniums growing in tubs which are filled with their roots should be supplied liberally with water, supplemented occasionally by a stimulant. If the roots have not already been top-dressed, a layer of loam and well-decayed horse-manure should be spread over them without delay. Attend to the tying and regulation of the shoots, and where growth is sparse plant young specimens to fill up the gaps. Large plants of Sweet Verbena which have been stored in a frost-proof shed are showing signs of active growth, and should be placed out-of-doors in a sheltered position; but it will be wise to have protective materials at hand in case of severe frosts. Agapanthus which are established in tubs may also be stood out-of-doors, but they will need slight protection during times of severe frosts. Keep the roots well supplied with water and give old, established plants plenty of liquid manure.

Seedlings.—Continue to prick out seedling plants before they become overcrowded, remembering that neglect in this matter will sure to be reflected in the measure of success at flowering time. Many plants may be pricked out into reserve beds, but it will be wise to place a few branches of Evergreens amongst them for protection. Seedling Antirrhinums, Dianthuses, Larkspurs, Matricarias, Scabious and East Lothian Stocks may be planted in the mixed border when they are large enough for transplanting. Mignonette may be sown in suitable situations at regular intervals; this sweetly scented flower requires a moderately rich, well-cultivated soil. Nasturtiums of the Tom Thumb type may be sown in the positions where they are required to flower. A batch of this flower may also be sown in pots to furnish plants for placing in beds which are at present occupied with spring-flowering subjects. Nasturtiums are excellent plants for massing, and should be planted in poor soil to obtain the best results.

Gaillardia.—The perennial Gaillardia makes a fine subject for the mixed flower-border, and is also an invaluable plant for dry, exposed situations. In dry seasons this plant is doubly valuable, and should be grown largely on this account. The plants should be arranged in clumps of three or four, and the shoots spread out and pegged down. There is a large choice of varieties; some of the sorts are very beautiful. The flowers are very useful for decorative purposes, as they last a long time as cut blooms.

THE HARDY FRUIT GARDEN.

By B. Goodacre, Gardener to Sir Ernest Cassel. Moulton Paddocks, Newmarket.

Strawberries.—Very serviceable beds from which a light crop may be gathered towards the end of the summer and a full supply of fruit next season may be obtained by planting out the stronger plants that have been forced. In many gardens where time and labour are scarce, the annual supply of out-door Strawberries is obtained by this system. The best time for planting these old crowns is at the end of the present month. As the plants are discarded from the houses they should be placed in a cool frame or other sheltered position and hardened gradually. Give the roots an ample supply of clear water and syringe the foliage thoroughly, to revive the leaves, which will have become exhausted and limp. Directly they have been well hardened the plants should be set out in their fruiting quarters. Plantations should be made on a north border, in order to prolong the season, and these strong plants will be found admirable for the purpose, as they will become established during the summer, thus having an advantage over layers planted in such a cold, damp situation during the autumn or early spring. I have seen fine crops of fruit gathered from a bed of Royal Sovereign Strawberries planted at the end of September, being plants that had been forced and afterwards put out on a north border early in May. After planting, which should be done firmly, a plentiful and constant supply of water is necessary till new roots are formed. Another method of maintaining a succession of plants is to plunge plants in their pots, and when the fruits are set, place them on a shelf in a cool house to ripen the fruit. The plants require plenty of root waterings whilst they are plunged.

Raspberries.—A dusting of artificial manure may be afforded the plants between the rows, pricking this in with a fork and afterwards placing a mulch of rotted manure from the farmyard over the roots. The manurial stimulants will strengthen the flower-spikes and greatly improve the size and colour of the fruit. Canes planted this season should, unless a crop is required this summer, be cut down to within twelve or fifteen inches of the ground. This treatment will result in strong canes developing from the base, and these will be the fruiting canes of next season. Newly planted Raspberries, however strong they may be, if allowed to fruit the first season only send up weak suckers that are useless for fruiting the following season. The autumn-fruiting varieties which were cut down to the ground as advised in a previous calendar, are sending up suckers, the strongest of which should be retained, and those not needed rubbed clean out. The canes that are retained will grow strong and need little or no support. They will fruit from their base to the top.

Loganberries and other Brambles.—The treatment of the numerous other berried fruits, such as Loganberries and Newberries, should be much the same as for Raspberries. If these plants are allowed to fruit the first year after planting the result afterwards is seldom satisfactory. By cutting down the shoots as advised for Raspberries, an abundant supply of strong canes will be sent up by the plants for fruiting next year.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the **PUBLISHER**, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher. — *Our Correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the* PUBLISHER; *and that all communications intended for publication, or referring to the Literary department, and all plants to be named, should be directed to the* EDITORS. *The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.*

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS, 41, Wellington Street, Covent Garden, London.** *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

Special Notice to Correspondents. — *The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

Illustrations.—*The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, APRIL 21—
Surveyors' Inst. meet.

TUESDAY, APRIL 22—
Midland Daffodil Soc. Sh. at Birmingham (2 days).

WEDNESDAY, APRIL 23—
R.H.S. Exam. in Cottage and Allotment Gardening.

THURSDAY, APRIL 24—
Norwich Spring Fl. Sh. 25 (F.).

SATURDAY, APRIL 26—
Ghent Quinquennial Exh. (9 days).

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich—45.4.

ACTUAL TEMPERATURES:—

LONDON.—*Wednesday, April 16* (6 P.M.). Max. 57° Min. 46°.
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—*Thursday, April 17* (10 a.m.): Bar. 29.2. Temp. 50°.
Weather—Overcast.

PROVINCES.—*Wednesday, April 16.*—Max. 50° Lincoln; Min. 44° Aberdeen.

SALES FOR THE ENSUING WEEK.

TUESDAY NEXT—
Trade Buildings, Carts and Utensils, Office Furniture, etc., at The Nurseries, South Woodford, by Protheroe and Morris, at 12.

WEDNESDAY NEXT—
Liliums and other Hardy Bulbs, Herbaceous Plants, Roses, etc., at 12. Palms at 5. At 67 and 68, Cheapside, E.C., by Protheroe and Morris.

FRIDAY NEXT—
Imported Cattleya aurea and others, also Established Orchids, by Protheroe and Morris, at 12.45.

Double Flowers.

The widespread habit of producing races with double flowers which is exhibited by many plants is of great interest not only to the nurseryman, but also to the botanist. The former has utilised this habit to increase the diversity and beauty of the flowers of the garden and greenhouse, and the latter has found in double flowers a series of problems which, were they solved, would contribute enormously to our knowledge of the morphology of plants. But neither nurseryman nor botanist has made any very considerable contribution to our understanding of the origin of this peculiar habit. Such a contribution, though not to be expected to arise directly from the accumulated knowledge of the practical horticulturist, might perhaps have emerged as the result of this accumulation. With but few exceptions the work of the botanist in the elucidation of the causes of doubling has been barren of result. It is true that he has classified the phenomena and demonstrated that doubling may be of diverse kinds; but although such pioneer work is a necessary preliminary to every investigation into causation, it has not, in the case of the enquiry into doubleness, progressed far beyond the initial and descriptive stage.

As is known both to gardeners and botanists, doubling may be due to the replacement of certain members of the flower by petals. This replacement or petalody may affect entire whorls of stamens, and as a result petals far more numerous than those of single flowers are produced. It may affect the pistils also, with the result that the double flower, containing neither stamens nor pistils, is sterile, and may be reproduced only by vegetative means. Such is the case with the old double white Chinese Primrose, and also with the old-fashioned Wallflower.

In other cases, doubling is effected by the addition of petals, as, for example, in the double form of Lobelia erinus; or buds may form in the flower and give rise to doubling by proliferation; and in yet other ways may the plant express the habit of doubling.

In her recent and valuable contribution to our knowledge of doubleness in flowers, Miss Saunders, after pointing out the various methods by which doubling is effected, lays useful stress on the fact—which follows from what has been said already—that doubling may be accompanied by loss of fertility, and that this loss of fertility may be manifested by either the pollen or the ovules or by both these organs of reproduction. Thus, in Stocks, Arabis, Cardamine pratensis, Abutilon, as well as in Wallflower and Chinese Primrose, doubling is accompanied by complete sterility. The last-named plant, however, is peculiar in that two types of double exist: the old-fashioned double white Chinese Primrose and the newer fertile races in which doubleness is expressed by a lamination of the petals so that, in addition to the normal five, there are also a number of supernumerary and superimposed petals which collectively form a corona about the centre of the flower. Similarly, the recently introduced double strains of Wallflower, brought out by German nurserymen, retain their fertility and manifest their doubleness by a lamination of their petals. In the Petunia the pollen is good, but the ovules, if formed, are in all but a few strains infertile. The opposite is the case with the Sweet William, in the doubles of which the anthers are sterile and the ovules capable of being fertilised. The Carnation resembles the Sweet William except that it produces a scanty supply of fertile pollen.

Hollyhocks, on the other hand, contrive to produce double flowers which may retain their reproductive organs in a fertile condition; and this, in a sense, is true also of the Welsh Poppy, Meconopsis cambrica, the double flowers of which show capriciousness with respect to their organs of reproduction, some flowers possessing a few fertile stamens, and others bearing pistils the ovules of which are capable of producing seed. Needless to say, these facts are constantly in the mind of all those whose business it is to supply the market with seed, and the peculiarities of the various races of plants with respect to sterility make the work of seed production a matter of difficulty. Thus the breeder of Carnations may find his operations curtailed by the failure to obtain pollen from an otherwise promising variety. In such cases as Petunia and Sweet William, which lack one or other of the reproductive organs, the doubles must be reconstructed in each generation by mating them with single fertile plants. So also is it with double Stocks from which both male and female organs are lacking; the doubles leave no progeny, and must be produced from single-flowered plants. The case of the Stock is indeed remarkable, for, as Miss Saunders has shown by her brilliant investigations, some singles are pure singles and throw none but single-flowered plants. Others are ever sporting and produce on self-fertilisation both doubles and singles. The ratio of doubles to singles appears to vary in different strains, but is constant for a given strain.

The explanation of this strange phenomenon of doubles produced by singles we owe to Miss Saunders. That explanation may be summarised briefly. In some plants singleness is a dominant and in others it is a recessive character. Thus in the Welsh Poppy and the Carnation the double is dominant; that is to say, the cross, pure double by single, yields double-flowered plants only. The same is probably true of the Rose, for cases are on record of double-flowered Roses throwing singles for a time, and then resuming their double habit. In the Chinese Primrose and Wallflower the opposite relation holds—doubleness being recessive, as indicated by the fact that the cross, pure single by double, yields only singles in the first generation. In Stocks also, single is to be regarded as dominant to double, but the behaviour of Stocks in heredity is evidently not so simple as in other cases. This behaviour, on which depends the production of doubles from ever sporting singles, has been elucidated by means of laborious experiments. Ever sporting Stocks which, as the name implies, yield doubles and singles on self-fertilisation, do not distribute the work of carrying the factor for singleness equally to the male and female reproductive cells. The male cells, one of which is contained in each pollen grain, lack always the factor for singleness. Of the female cells, one of which is contained in each ovule, half carry the factor for singleness and half lack this factor. Using a capital letter (S) for the factor for singleness and a small letter (s) for the absence of this factor, we may represent the constitution of the reproductive cells with respect to doubleness and singleness thus:—

Ever Sporting Single Stock

Male Cells	Female Cells
all s	S and s in equal numbers

Wherefore, when an ever sporting variety is self-fertilised an "s pollen





Photographs by R. A. Malby

DIANTHUS IN THE PONT DE NANT ALPINE GARDENS.

D. furcatus *(above)*.

D. frigidus *(below)*.

n" meets either an "S ovule or an s
e," and hence two types of seed are
luced. In the one type (S s) the plants
single; in the other (s s) they are
ble. It is true that in certain strains
number of doubles is greatly in excess
hat of the singles; but that fact in no
invalidates the general truth of Miss
nders' conclusion. The curious or
ical inquirer must, however, be re-
ed for a full explanation to Miss Saun-
s' own work, a summary of which
published in the current issue of the
rnal of the Royal Horticultural
iety.

---

he Chemistry of the Soil.

Considerable progress is being made in the important problem of the chemistry of the soil, l the investigations in this subject are ng pursued nowhere so vigorously as in laboratories of the United States reau of Soils.

Until recently our knowledge of soil mistry was curiously vague. The neral constituents were, of course, well own, but the all-important organic sub-nces which together constitute the mus were all but uninvestigated. This the more surprising since, as all culti-ors know, the constituents of humus are vital importance in determining the ue of a soil.

The work of isolating the various or-nic constituents of humus is of necessity orious, yet it must be done if the bio-ical value of these several soil-con-tuents is to be discovered.

The recent investigations of Mr. E. C. orey (Bulletin 88 U.S.A. Dept. of Agri-lture) have brought the number of own organic soil compounds up to 35, d it is certain that this considerable mber will be increased enormously as a sult of further investigations.

Of these 35 substances 13 are organic ids, 9 are organic bases, 3 are carbo-drates, 2 aldehydes, others are organic mpounds containing sulphur or phos-orus, others again belong to the chemical asses of alcohols, hydrocarbons, etc.

Cultivators, no matter how lacking they ay be in chemical knowledge, cannot fail note with interest the general results this chemical investigation of the soil; r the chemical composition of the soil ays a large part in determining soil fer-ity. On it depends not only the degree growth of the plant he cultivates; but so, as it may be predicted, it controls e fungous and bacterial flora of the soil. ith advance of knowledge of soil emistry we may expect a much surer in-ght into the many mysteries of the soil—s harbourage of pests, its powers of re-very of fertility, and the like—which ysteries, though appreciated by the rower, baffle the wit of the scientific udent.

Surveyors' Institution.—The next ordinary neral meeting of this society will be held on onday, the 21st inst., at 8 p.m., when a paper ll be read by Mr. R. G. G. Reed, entitled Site Value Deductions for Construction of and ppropriation of Land for Roads.'

The Ghent Quinquennial.—The great Quin quennial Horticultural Exhibition at Ghent will be opened on the 26th inst. Prices of admission are as follows: Saturday (opening ceremony) 10f.; Sunday and Monday, 27th and 28th, 5f.; Tuesday and Wednesday, 29th and 30th, 3f.; Thursday, Friday, and Saturday, May 1, 2, and 3, 2f.; and Sunday, May 4 (closing day), 1f. The entrance ticket for the Horticultural Show gives the right of entry to the whole of the International Exhibition.

Liverpool Spring Flower Show.—We are informed that gold medals were awarded to the Liverpool Orchid and Nursery Company and Messrs. Mansell and Hatcher, Rawdon, for non-competitive exhibits of Orchids in addition to those given in the report of the show on p. 242.

The Uppsala Horticultural Society.—In commemoration of its fiftieth anniversary, the Uppsala Horticultural Society of Sweden has issued a small but admirable Souvenir volume, a copy of which we owe to the kindness of the secretary of the society, Mr. Ivan Ortendahl. We are sure, both from the excellence of text and from the list of members appended to the volume, that the Uppsala Society is maintaining and extending the prestige which it has so long enjoyed.

L.C.C. Parks Committee.—The Parks and Open Spaces Committee of the London County Council has appointed Major H. B. Lewis-Barned as its chairman. Major Lewis-Barned was vice-chairman last year, and succeeds Mr. J. W. Lorden, who has retired from the Council. The vice-chairman will be Col. R. J. Cooper.

Potassium Permanganate for Chrysanthemums.—According to the report of the 17th Congress of French Chrysanthémistes, Chrysanthemums are benefited and their fungus pests are kept in check by watering or washing the pots with a weak solution of potassium permanganate (½ gram to a litre of water). The solution should be so applied as to wet the whole surface of the pot.

Leaf Curl of Potatos.—Experiments of Messrs. Köck and Kornath (*Zeitsch. tandw. Versuchsw. Oesterr.*, 1911) appear to demonstrate, first, that this disease of the Potato is inherited, that is, that tubers from affected plants give rise to plants which also show leaf curl; second, that the disease is due to a micro-organism—possibly a species of Fusarium—and that it may be transmitted to healthy plants by way of the soil.

Flowers in Season.—A box of unusually fine Wallflowers has been sent us by Mr. H. Rabjohn, from Twickel Castle Gardens, Delden, Holland. The flowers were a brilliant red and more than one inch in diameter. Mr. Rabjohn states that the plants are of a giant strain, and are grown to flower from January until blooms in the open are available in plenty. They only receive the protection of a light, air being admitted, even during times of frost. Our correspondent states that for blooming at Christmas and earlier they use a variety known as Early Parisian.

Egg Train in North Wales.—The Egg and Poultry Demonstration Train, which has been organised by the Agricultural Organisation Society and the National Poultry Organisation Society, will start from Euston on the 23rd inst. on its varied journey through North Wales, in the course of which it will cover some 1,100 miles, and is due back in London on May 6. For this the London and North Western and Cambrian Railways, which are the companies concerned, have made most complete arrangements. The former of these has placed two of its finest and largest vans and a restaurant car for the staff at the disposal of the societies named. One of the vans has been divided to provide a dark room in which the mysteries of an egg can be revealed by means of the electric light. Here Mr. Verney Carter and his assistants will demonstrate which are the eggs that command the best prices on our markets, and how "stales," "rots," "spots," and "cracks," to use the trade terms, can be discerned without breaking the shell. Even the incipient embryo can be seen in this way. Various forms of testers will be shown, inclusive of a novelty in this country, which was found in Holland by Mr. Edward Brown, who is in charge of the expedition, during a recent visit to that country. Eggs of all nations competing with, as well as our own, are to be displayed, and the methods of packing adopted both at home and abroad. A mechanical grader is to be in use. Similar provision is to be made in respect to poultry, for which the apparatus used for preparing high-class specimens are arranged for. These, with models of the most modern forms of houses, incubators, brooders, coops, chick boxes, etc., will make a unique display, and a fine series of charts, diagrams, and photographs have transformed it into a poultry college on wheels of a most practical character. Literature in English and Welsh will be distributed freely, and the speakers will be able to discourse in both languages, for the area to be traversed is largely where Welsh is generally spoken.

Manganese as a Fertiliser.—Messrs. Sullivan and Robinson, of the Bureau of Soils, point out in Circular 75 the present somewhat unsatisfactory state of knowledge with respect to the value of manganese compounds as fertilisers. Numerous experiments on very varied plants have been made in many parts of the world; but the results have been far from uniform. Leguminous crops appear to benefit more than do cereals or Beet or Potato. In some cases an increase of yield amounting to 25-30 per cent. is claimed as a result of applying manganese fertilisers, and in others the effect has been nil. Inasmuch as manganese compounds are distributed widely but somewhat unevenly in the soil, the contradictory results may be due to the fact that in some experiments the soil employed was already well provided with manganese. The authors promise the results of further experiments—which will be awaited with interest—and point out that in no case should a dressing of more than 100lb. to the acre be employed of manganese compounds; the dioxide seems to be of least effect, and manganese sulphate has so far given the best results.

Prices of New Daffodils.—In a recent issue of the *Field* a correspondent remarks upon the high prices which are obtained for bulbs of the rare Daffodils and poets Narcissi. He quotes as examples Challenger (£32 10s. per bulb), Crœsus (£25), Firetail (£30), and Uncle Robert (£15 15s.). "One might reasonably ask," he continues, "why Challenger should be £32 10s. whilst Firetail is £30. Let us say the raiser of a good new seedling asks and obtains from a grower £100 for it. The buyer propagates it, and eventually offers the bulbs for sale. In the ordinary course of things he ought to have a dozen bulbs from the one he began with after two years' growing. What are they worth? Would £10 per bulb be a fair price—or should it be guineas? Those who wait can get the bulbs at a low enough price. It is not many years since we paid £5 for a bulb of Mme. de Graaf, which can now be bought at 5s. per hundred." The point raised is an interesting one, but it is, of course, well understood that a novelty has a peculiar value *quâ* novelty, quite apart from its beauty.

Book Prices.—Included in an auction sale of autographs, historical documents and books at Messrs. Christie's Rooms on the 9th inst. were the following:—Autograph of Carl Linnæus, the botanist, being his holograph dedication to George Edwards, one page folio, dated 1756. £4 5s.; *Catalogues Plantarum a catalogue of trees, shrubs, plants, etc., which are propagated in the gardens near London*, 1730; J. E. Smith's *Icones pictae Plantarum Baridrum* 1790, and a collection of over 200 botanical plates

£4 15s.; W. CURTIS'S *Flora Londonensis, or plates and descriptions of such plants as grow wild in the environs of London*, 6 vols., 1777, £2 18s.; *A Niewe Herball, or History of Plants*, by R. DODONÆUS, translated by HENRY LYTE, first edition, black letter, 1578, £13 10s.; *The Grete Herball, which geueth parfyte knowledge and understandinge of al maner of Herbes and theyr gracious vertues*, black letter, 1561, £5 10s.; P. MILLER'S *Figures of Plants described in the Gardeners' Dictionary*, 300 coloured copper plates, 1760, £1 2s.; P. S. PALLAS'S *Flora Rossica*, 2 vols., 100 coloured plates, 1784-8, £2 15s.; T. SHELDRAKE'S *Botanicum Medicinale: an Herbal of Medical Plants on the College of Physicians' List*, 117 coloured plates, 1759, £1 4s. At the sale of the fourth portion of the library of the late Mr. CHARLES BUTLER, of Warren Wood, Hatfield, at SOTHEBY'S, on April 9, 10, and 11, the following were amongst the works disposed of :—*Herball or Generall Historie of Plantes*, by JOHN GERARDE, enlarged and amended by THOMAS JOHNSON, folio, 1636, £4 16s.; and *The Garden of Health, containing the rare and hidden Vertues and Properties of all kinds of Simples and Plants*, by WM. LANGHAM, black letter, 1633, £1 5s.

BARR MEMORIAL CUP. — (See *Gardeners' Chronicle*, April 13, 1912, p. 241.)—The Barr Memorial Cup for 1913 has been presented to Mr. P. RUDOLPH BARR. It will be remembered that the Committee, consisting of certain members of the R.H.S. Floral and Narcissus Committees, was to meet annually for the purpose of awarding the Cup "in connection with work among Daffodils." On this occasion the Cup has been awarded by the Narcissus Committee of the R.H.S.

MADRYN FARM SCHOOL.—Mr. E. H. EVANS, B.Sc., has been appointed Principal of the new Farm School at Madryn Castle, Carnarvon, the Castle and its estate having been purchased by the Carnarvon County Council for the purposes of a farm college. Mr. EVANS was formerly Assistant Director of Agriculture at University College, Reading. Mr. A. TURNER, until recently at the East Anglian Institute of Agriculture, Chelmsford, has been appointed Superintendent and Instructor of the horticultural section.

FATAL ACCIDENT TO A KEW EMPLOYEE.—On Tuesday, the 8th inst., a carter named MARSHALL, employed in the Royal Botanic Gardens, Kew, was engaged in carting manure in the Manor Road, Richmond, in the vicinity of the gardens, when his horse, a spirited young animal, was frightened by a motor-'bus, and galloped along until it came to a level crossing, where MARSHALL was thrown off the cart, run over, and so seriously injured that he died the same day.

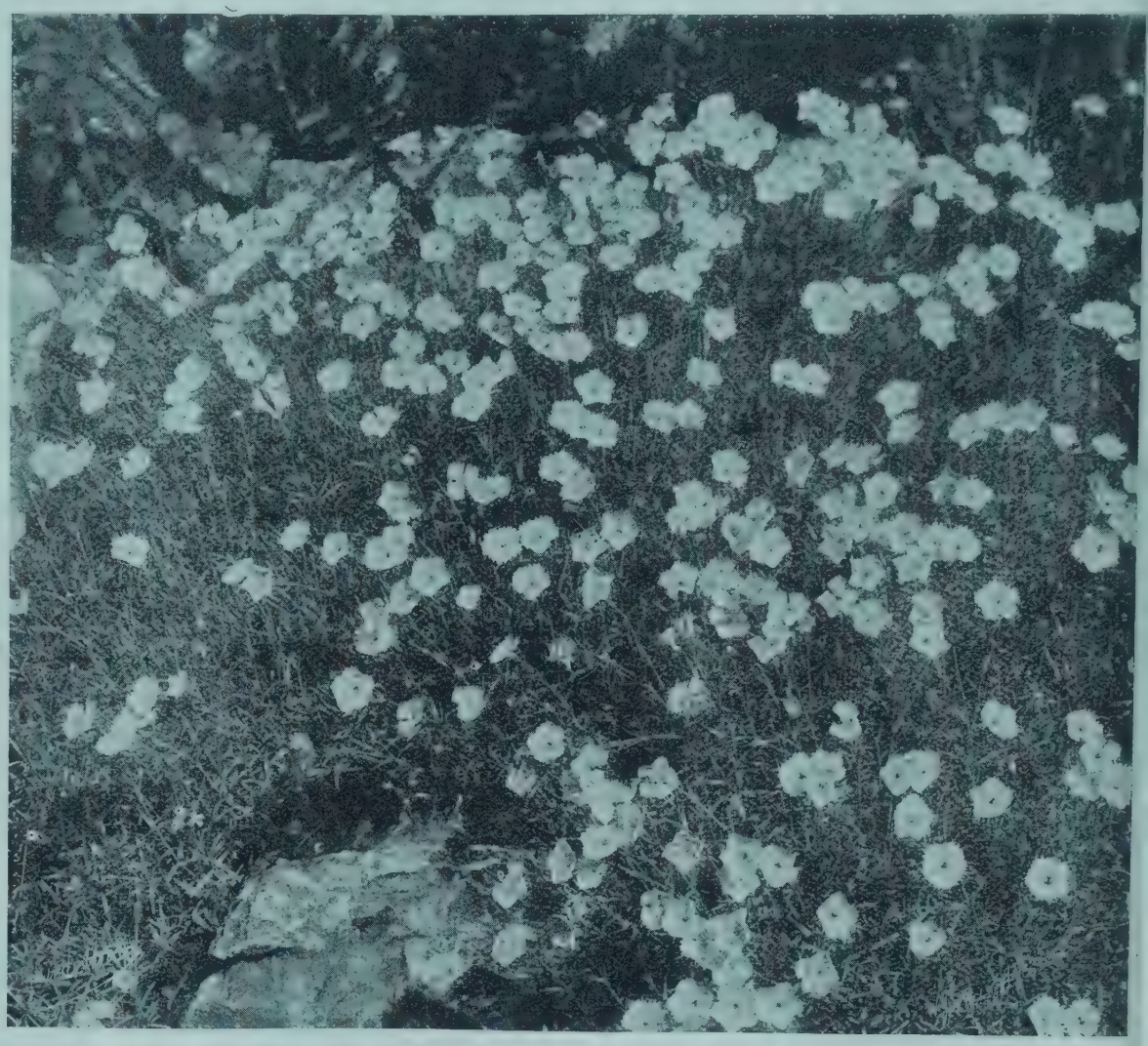
MR. JOHN HEAL, V.M.H.—On Saturday, the 12th inst., Mr. HEAL, of Messrs. JAMES VEITCH and SONS, Chelsea, completed his fiftieth year of service with the firm. Mr. HEAL'S work as a hybridist is well known. He has been especially successful in the raising of Winter-Flowering Begonias, greenhouse Rhododendrons, Hippeastrums, Streptocarpuses, Phyllocactuses, and other indoor flowering plants. May he long be spared to continue the work he carries out with such enthusiasm and success.

THE RUBBER MARKET.—Echoes of the Rubber boom of 1910 are beginning to make their appearance in the public Press, both in Law Court proceedings and in reports of success or failure of some of the numerous companies formed at that exciting period. The recent drop in the price of rubber in the London market is again attracting the special attention, not only of those financially interested, but also of those who have watched the progress of the extended cultivation of rubber-yielding plants and the enormous development in the applications to which this remarkable substance has been applied. Referring chiefly to some of the newer plantations in the Malay States, one of the leading London daily papers recently drew special attention to the prospects of these "young producers," and from a table showing the acreage of these plantations, ten in number, it would seem that the number of trees planted since 1908 amounted to 125,072. "In almost every one of these," the writer says, "the young trees just coming into tapping represent about three-quarters of the planted area, so that the productivity of plantation is clearly a thing of the immediate future. It is estimated that the rubber harvest for 1913 will be considerably in excess of that for the past year, and as the young trees either come into tapping or increase their yield the crop will rise each harvest. It seems that the average price realised for this rubber has been from 4s. 6d. to 4s. 7½d. per lb. At the time of writing the prices are 3s. 11d. to 3s. 11½d. per lb. for plantation rubber, and 3s. 11d. for fine hard Para.

DWARF-GROWING PINKS.

(See figs. 110, 111 and 112, and Supplementa Illustrations.)

THE Dianthus family may be convenien divided into two distinct sections. The m popular of the two groups from a garden po of view is comprised of species such as neglectus and D. cæsius, which form cushions dwarf stature and produce short stems beari one, or, rarely, two flowers. The members of t other group are all taller growing plants wi more grass-like foliage, the long stems beari capitate heads of flowers; D. Carthusianor may be cited as an example. Dr. Williams, his enumeration of the species of the gen Dianthus in 1889, mentions 231 species found Europe, temperate Asia, and North and Sou Africa. No Dianthus is found wild in Nor America, although D. Armeria has becor naturalised in some districts. Pinks grow wi



[*Photograph by W. Irving.*

FIG. 110.—DIANTHUS CÆSIUS: THE CHEDDAR PINK.

SELBORNE SOCIETY. — The annual general meeting of the members of the Selborne Society will be held in the theatre of the Civil Service Commission, Burlington Gardens, on the 21st inst. at 8.30 p.m. The chairman of the Council, Dr. DUDLEY W. BUXTON, will preside.

WART DISEASE AND DEEP CULTIVATION.—The results of experiments carried out by Mr. MALTHOUSE at the Harper Adams College illustrate the value of deep cultivation of the land not only in increasing the yield but in reducing the damage done to Potatos by Wart Disease. Three plots, of which one was dug in the usual way, the second had "the top layer of soil carefully removed and the second spit worked up," and the third was trenched three spits deep, the top layer being placed at the bottom of the trench and covered with the other layers, gave in the case of Up-to-Date the following yields: Plot 1, 65lb. per sq. rod; plot 2, 205lb.; and plot 3, 255lb. Of these numbers the percentages of warted tubers in the three plots were: Plot 1, 53; plot 2, 41; plot 3, 19.5.

in various situations, some making their home in grassy meadows, others on wooded slopes, whilst at higher elevations they are met with in the stony debris of the moraines, or in fissures, and on ledges of rocks. In this country the genus is represented by D. deltoides, the Maiden Pink, which is found in pastures, and D. cæsius, the Cheddar Pink, which grows on rocky ledges of cliffs.

Pinks are invaluable in the rock garden for planting on sunny ledges, sloping, stony banks, or in the chinks of loose walls. Many of the species soon form large masses of glaucous foliage, and are a pleasing feature in the garden at all times. During the spring months they produce their beautiful flowers in abundance, making a delightful display of colour. Whilst most of the Dianthuses are easy of cultivation, certain of the smaller-growing species from the higher altitudes, such as D. glacialis, need much care and attention, and require especially protection from slugs, which are responsible for most failures with this plant.

The species described below do not include all the dwarfer kinds in cultivation, but they comprise a selection of the more rare, distinct, and attractive plants. Some of those omitted may perhaps compare favourably with those enumerated, but in a limited collection the following are the most essential.

D. ALPINUS (see fig. 109). The illustration shows a plant of the Alpine Pink growing in the Alpine garden of Pont de Nant, Switzerland. This garden, which is situated at an elevation of over 4,000 feet, is an ideal place for the cultivation of the higher Alpine plants. D. alpinus, however, is not a difficult plant to cultivate, and grows well in gardens in this country if planted in a sunny position in gritty, well-drained soils. It is one of the most distinct species, the deep-green, shining leaves forming tufts several inches across. The large, rich, rose-coloured flowers are dotted with crimson spots; they are produced so freely as to quite cover the whole of the plant. D. alpinus has been crossed with D. callizonus, the hybrid being known as call-alpinus.

D. CÆSIUS (see fig. 110). The Cheddar Pink is a most useful garden plant, and is easy of cultivation on sunny ledges, in rocky fissures, or cracks of old walls, or in a well-drained border. The wild plant has rather small flowers, but many forms exist with finer, larger blooms. The flower stems are not more than 2 to 3 inches high; some bear single flowers, whilst others have branched inflorescences.

D. CALLIZONUS. Among the many small Alpine species included in the Pink family none surpasses this beautiful Transsylvanian species. When planted in a favourable position it grows almost as freely as D. cæsius, but the flower stems are not so long. Many complain that it is a difficult plant to cultivate, but that is probably because of wrong treatment, for, unlike most Dianthuses, it grows best in shade, and should be planted in a position facing north-west. The soil should be well drained, and of a gritty nature. The plant is best increased by means of cuttings inserted in summer in a north frame. The large flowers are produced on short stems about 2 inches long; they are of a bright rose colour, with a zone of paler rose towards the centre, which is beautifully speckled with crimson. D. callizonus is an excellent plant for growing in pots in the Alpine house.

D. FREYNII. This pretty Hungarian species is one of the smallest of the family. It forms dense tufts of glaucous foliage not 2 inches high. The rose-coloured flowers are tinged with lilac, and are produced so freely as to form a sheet of colour obscuring the foliage. This Pink is a choice plant for a sunny position, and should be planted in gritty soil.

D. FRIGIDUS (see Supplementary Illustration). This species may be described as a dwarfer-growing, more compact form of D. sylvestris. It is of very elegant, free habit, growing not more than 3 or 4 inches high, and producing flowers of a rosy-pink colour. Some botanists regard D. frigidus as a form of D. sylvestris, which is found over the whole of the European Alps. Another slightly different, dwarfer form is known as D. inodorus. As extreme forms they are distinct for garden purposes, for while these two variations are only a few inches high, D. sylvestris is a free growing plant, often reaching 1 foot in height. All the plants of this group grow best in a somewhat shady position planted in well-drained soil.

D. FURCATUS (see Supplementary Illustration). This plant is a rare species and grows wild in the Piedmont. It is the tallest of any dealt with in this note, and is closely allied to D. pungens, a well-known garden plant. As may be gathered from the illustration it is a free-growing and free-flowering plant, being especially suitable for planting in the rock garden in rocky fissures or old walls. The pale, rosy-purple flowers have deeply fringed petals. In common with other Dianthuses this species crosses freely with other Pinks, and the safest way of keeping the plant true is to propagate it from cuttings.

D. GLACIALIS (see fig. 112). The Glacier Pink is only found on the high granitic mountains of Central Europe, where it forms little tufts of grass-like, green foliage an inch or so high. The rosy-crimson flowers are large in proportion to the plant, and usually borne singly on the stems. It should be planted in granite chippings to which has been added a small proportion of well-decayed leaf-mould. This charming little plant produces its flowers in succession from May to July.

D. GELIDUS (see fig. 108) is the Transsylvanian form of the Glacier Pink, and the illustration, which is reproduced from a photograph taken by Mr. Malby in the garden of the Pont de Nant, shows its compact habit and large flowers. The gritty character of the soil in which it is growing may also be observed in the picture.

D. MICROLEPIS. This is another miniature species closely allied to D. Freynii, but with greener foliage, and grows wild in Transsylvania and the Balkans. The flowers vary from rosy-lilac to white, and are about ¾ of an inch across. The petals are regularly serrated at the edges.

D. NEGLECTUS (see fig. 111). This species is probably one of the best Alpine plants in the genus Dianthus. It forms dense cushions of deep-green, grass-like foliage, which is covered in summer with masses of carmine-rose coloured flowers, each more than 1 inch across. The stems on which they are produced singly are from 1 to 3 inches high. Buff colouring on the under sides of the petals is a distinctive feature in this species, which is very hardy and a free grower. Many inferior plants are grown in gardens as D. neglectus, these having originated probably as hybrids. The plant has a wide distribution in its native habitats, being found in the Pyrenees, Alps, and Transsylvania.

D. NITIDUS. This rare little species is found in Hungary, and on the mountain ranges of Albania and Macedonia. It is closely allied to D. alpinus, but has more glaucous and narrower leaves, whilst the rose-coloured flowers have their petals fringed.

All the smaller-growing Pinks are admirable subjects for wall gardening, with their compact little cushions of foliage growing from the crevices, covered in season with numerous large flowers that form beautiful sheets of colour. They are also quite at home in the moraine. *W. I.*



FIG. 111.—DIANTHUS NEGLECTUS: COLOUR OF FLOWERS CARMINE-ROSE.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

LEPTOSPERMUM SCOPARIUM NICHOLLSII. — With reference to the variety of Leptospermum scoparium known as Nichollii (see *Gardeners' Chronicle*, June 20, 1908, and June 15, 1912), Dr. L. Cockayne writes to me from New Zealand to say that the name of the man who discovered the scarlet variety was Nicholls, and therefore the name of the plant should read "L. S. var. Nichollsii," and not "Nichollii." The plant has been figured in the *Botanical Magazine*, where the name Nichollii has also been used. *A. A. Dorrien Smith.*

PLANTS WHICH NEVER GROW UP.—In connection with the reference on p. 236 to Veronica cassinioides, which, though it never grows up, produces flowers like an adult, it may be of interest to record the fact that a young plant of Eucalyptus in my possession has produced normal flower buds though only two years old. The plant in question was raised from seed in 1911, and its main stem was cut back at the end of that year. In the second year one of the lateral shoots took up the position of the main stem, and towards the close of autumn produced a number of short, axillary inflorescences with about three buds each. The leaves subtending the inflorescences have the character of the juvenile foliage and are not the pendant sickle-shaped leaves of the mature plant. I am in hopes that with warmer and sunnier weather the flowers will expand in this the third year of the plant's existence. *F. E. Weiss, The University, Manchester.*

MOVABLE GREENHOUSES. — In speaking of the latest type of movable greenhouse in your last issue (page 242), *Southern Grower* states "these would not be subject to rates." Is it not a fact that no greenhouse is subject to rates? A greenhouse is a "trade fixture," not a building," and cannot be rated as a building. It may, however, be taken into account as raising the value of the land upon which it stands, which in practice amounts to [illegible]

same thing, and I am afraid that no assessment committee would exempt a greenhouse because it rested on wheels instead of walls. *Charles E. Pearson.* [So far as quarter-rating under the Public Health Act, 1875, is concerned, we agree with our correspondent; but as regards matters coming within the Agricultural Rates Act, 1896, we do not consider that it would be correct to say that greenhouses are not subject to rates. The latter Act expressly provides that the land and the buildings are to be separately valued, and in the well-known Worthing case of "Smith v. Richmond" it was decided that, for this purpose, greenhouses must be treated as buildings (although the value is not to be calculated on the structural cost but at the rent at which they would be expected to let to a tenant from year to year, if they could only be used for the cultivation of the land). In practice we should think it quite possible that an assessment committee would refuse to pass by a greenhouse because it rested on wheels instead of on walls, but whether the committee would be right is another matter, and one on which we certainly think it would be worth while to obtain a judicial decision. Whatever may be the position with regard to the rails, it would seem to be overstraining the English language to describe the new movable greenhouses as "fixtures" at all.—Eds.]



Fig. 112.—DIANTHUS GLACIALIS: FLOWERS ROSY-CRIMSON.
(See page 255.)

"Among the Hills."—I notice certain allusions in M. Correvon's recent delightful article which appear unfavourable to *Among the Hills.* May I be allowed, therefore, to vindicate the accuracy of my effort (and, indeed, give thanks that only details so minute should have been discovered to bring against me). In the first place, my remarks on the "Mt." Cenis, "Mt." Iseran, etc., and attributing of it to the Graian Alps are both based on Balls' *Alpine Guide*, an authority so respectable as to put his followers quite beyond reach of contempt. In the second place, my intention was never to deny limestone to the Mt. Cenis, but to emphasise the mainly non-calcareous formation of a range that revels in Eritrichium, Saxifraga retusa, S. bieflora, Gentiana imbricata, Campanula Allioni, C. cenisia, Saponaria lutea, Primula pedemontana, and P. viscosa; Ranunculus glacilis, Geum reptans and Androsace alpina. Finally, with regard to Saxifraga pedemontana, M. Correvon has been led into mistake by an unforetellable coincidence. He once told me (as I state) that Saxifraga lingulata abounded in a certain valley. When I got there I found that "lingulata" was clearly a lapsus linguæ for "pedemontana," which there indeed did abound (they could not be found together, the one species being calcicole, the other calcifuge). Unfortunately, when I came to write of this expedition, I followed my usual practice of inventing a false name and direction, so as to divert marauders from S. florulenta. And the name I made up was "Rovinette": M. Correvon, reading, naturally thought I meant "Ruvinette" (a valley of which I had never in my life heard), and which is still unvisited either by M. Correvon or myself, and therefore accused me of attributing to him a false localisation in a valley never visited by him. His other geographical divisions have the same answer: when I took my readers to see Daphne rupestris on "Rocca Longa," I had no sort of intention of telling them the right route. I made up instead a purely fantastic and delusive itinerary, at which M. Correvon very justly mocked, not having then realised that it was meant precisely to be mocked at by those who know. And, to conclude this note, which I think is owing to myself, I may once more allow my heart to swell with pleasure in the thought that so much research has only so far been able to muster so few points against *Among the Hills*—and points so small in themselves and so easily dissipated by explanation. No doubt there are more and graver! *Reginald Farrer.*

SOCIETIES.

ROYAL HORTICULTURAL.

April 15-16.—A Daffodil Competition was held in conjunction with the Society's usual fortnightly meeting in the Vincent Square Hall on Tuesday last, and the exhibition remained open on the Wednesday, when a Conference on Primulas took place. All the available space in the Hall, including both annexes, was filled with exhibits.

Besides those in the Competitive classes, there were many excellent exhibits of Daffodils for which Medals were awarded by the Narcissus Committee. This Committee also recommended one First-Class Certificate and three Awards of Merit to Novelties.

The Floral Committee granted six Awards of Merit and numerous Medals for groups.

The Fruit and Vegetable Committee made no award to a Novelty, but a Gold Medal was recommended for a collection of new season's vegetables staged by Messrs. Sutton & Sons.

At the 5 o'clock meeting in the Lecture Room the Rev. Professor George Henslow delivered an address on "The Origin of Life; Why is it Undiscoverable?"

Floral Committee.

Present: H. B. May, Esq. (in the Chair); Messrs. G. Reuthe, J. W. Moorman, H. J. Jones, John Dickson, Arthur Turner, Chas. E. Pearson, W. P. Thomson, C. E. Shea, W. J. James, E. H. Jenkins, George Paul, A. A. Dorrien-Smith, W. A. Bilney, R. C. Notcutt, W. J. Bean, John Green, C. R. Fielder, A. Watkins, J. W. Barr, Chas. Dixon, W. Howe, J. F. McLeod, Thomas Stevenson, Bernard Crisp, and R. Hooper Pearson.

Awards of Merit.

Hippeastrum (*Amaryllis*) *Eurasian.*—A fine plant carrying two large flowers of a bright carmine-crimson; the texture is smooth, the form good and the habit very dwarf.

Androsace tibeticum.—A dainty little species collected by Mr. Purdom in Northern China. The tiny flowers, ¼ to ⅓ inch in diameter, in umbels of eight to twelve, rising but an inch or two above the foliage, open bright rose and fading to blush-white, the shades of colour in the same head making the plant an unusually pretty one. The basal leaves are about ½ inch long, spathulate and in rosettes. Crimson-stemmed runners rise with the umbels and carry small ovate, downy leaves.

Primula Maximowiczii.—A remarkable species collected by Mr. Purdom in Northern China. The flowers are in tiers separated by short nodes, the lowest tier in the specimen shown carrying 13 flowers. The colour is bright carmine-crimson, but the flowers are pendent on half-inch pedicels and the oblong corolla segments are strongly recurved, so that the round eye of the flower, which does not differ from the body colour, is not seen. The leaves are lanceolate, glabrous, finely crenated and waved at the margin, rather fleshy in substance and tapering to the short, broad, fleshy stalk. The flower stem is stout and erect and in the plant shown not more than 9 inches long. The expanded flowers had a faint scent of violets.

These three plants were shown by Messrs. Jas. Veitch & Sons.

Helichrysum bellidioides.—This dainty little "Everlasting," which we noted at the last meeting, was shown with specimens of the same species that had stood out-of-doors during the past winter and so far proved hardy. The normal outdoor plants were only in bud, and the foliage was brown and dowdy. But under glass a great profusion of bloom had been thrown up. The flowers are about ½ inch in diameter, with numerous pure-white pointed rays in many rows and a small greenish-yellow disc. The growths are prostrate, with small ovate, entire leaves, but the flowers are held erect on 3 to 4 inch stems as grown under glass. Shown by Mr. A. Hemsley.

Primula viscosa "*Beauty.*"—A vigorous hybrid said to be derived from crossing P. viscosa with the Auricula "Innocence." The flowers are bright violet-purple, 1¼ inches in diameter, very smooth and flat and of a good round form, except for the notch in the centre of the petals. There is a small, neat, clear white eye. The plant shown carried two trusses, one with 20 expanded flowers, borne rather loosely.

Auricula "*Suffragette.*"—A fancy variety; yellow, slightly tinted with buff. The band of white paste is neat and well proportioned and the flowers are large, though a little irregularly disposed in the head. These two shown by Mr. Jas. Douglas.

Other Novelties.

The feature of the meeting was its richness in new Primulas. Mr. Gill, Falmouth, showed P. Wattii (see *Gard. Chron.*, April 27, 1912, fig. 138), which he had formerly shown under the provisional name of P. Gillii. It is a very dainty little species, with a few-flowered close umbel of pendent violet-purple, cup-shaped flowers, of which half the inner surface is covered with white meal. The leaves are soft textured

almost pinnatifid and very hairy. Messrs. James Veitch & Sons showed a number of new Chinese species. P. purpurea, an old but little known species, has a few flowered (6) umbel of large, deep-purple flowers on a long slender stem which is 15 inches long. The corolla segments are oblong, giving the flower a stellate appearance, and the deep purple colouring of the inner surface of the tube is shown up by a narrow band of sulphur-yellow forming the eye. The leaves are lanceolate, slightly serrated, and with a fine pubescence on the upper surface. P. tangutica (see fig. 17, July 15, 1905) has deep crimson pendent flowers with linear recurving segments and small pentagonal eye. Primula tangutica var. sulphurea, from West Kansu, appeared to be a distinct plant. The flowers are greenish-sulphur, with large and broad segments which expand flat instead of recurving and are held more horizontally; the calyx, too, is longer than in the type, with deep divisions and finely pointed segments. The leaves are lanceolate, tapering to a brown stalk half as long as the blade. All these forms were slightly fragrant.

General Exhibits.

Messrs. W. Paul & Son, Waltham Cross, Hertfordshire, showed climbing Roses in a groundwork of dwarf cluster varieties. The great feature of this exhibit was a white form of Tausendschön, a splendid acquisition. (Bronze Banksian Medal.)

Mr. Geo. Prince, Oxford, was awarded a Silver Banksian Medal for an exhibit of Roses. In the centre of the group was a large epergne filled with the pretty W. Allen Richardson variety. A pleasing new Polyantha variety with lax trusses of small red Roses was shown under the name of Erna Teschendorff. Another new variety of this type, not unlike a dwarf Tausendschön, was named Ellen Poulsen.

Messrs. B. R. Cant & Sons, Colchester, showed a group of beautiful Roses. Several were new varieties, of which Sallie, a hybrid Tea with pale flesh coloured blooms, deeper coloured in the centre and showing a pale yellow base; Elizabeth, a pink variety, with habit and foliage similar to Frau Karl Druschki; and St. Helena, a blush variety, were the more noticeable. (Silver Flora Medal.)

Messrs. W. Cutbush & Son, Highgate. exhibited Roses and Carnations, for which a Silver Banksian Medal was awarded. The dwarf Polyantha Roses were very attractive, and included the newer Joan of Arc, white, and Gloire de Polyantha, rose. Amongst the Carnations was the new white variety, Mrs. Wilfred Gott, and Mrs. Lucy Mackinnon, a large scarlet bloom, with a strong perfume.

Messrs. Stuart Low & Co., Enfield, exhibited the sweet-scented Boronia megastigma, B. heterophylla, with deep, rose-coloured flowers; Acacia verticillata, A. armata, various Ericas; Hydrangea Mme. Mouillière and varieties of Carnations. (Bronze Banksian Medal.)

A Silver Banksian Medal was awarded to the St. George's Nursery Co., Darlington, Middlesex, for superb plants of greenhouse Calceolarias.

Mr. L. R. Russell, Richmond, filled a large table space with Clematis, Hedera Sheen Silver, Ceanothus Veitchianus, Clianthus puniceus, Nertera depressa in fruit; Kennedya monophylla, Burchellia capensis, Diosma capitata and other plants. (Bronze Banksian Medal.)

Messrs. H. B. May & Sons, The Nurseries, Upper Edmonton, showed Roses, Ferns, Hydrangeas and Violas. Molly Pope, yellow; White Swan, Rosy Morn, purple; and Bridal Morn, pale blue, are four pretty bedding Violas with good constitutions. (Silver Banksian Medal.)

Messrs. Wills & Segar, Nurserymen, South Kensington, showed miscellaneous flowering plants, including magnificent Ericas—E. Cavendishii, E. persoluta and E. ventricosa magnifica—a batch of Mignonette, blooms of Gerbera Jamesonii, and Richardia Pentlandii.

Messrs. James Veitch & Sons, King's Road, Chelsea, exhibited a floor group of Azaleas and Rhododendrons. The Azaleas were splendid specimens trained as half-standards, and in the centre of these was a remarkably fine plant of Rhododendron, Countess of Haddington, covered with the beautiful blush tinted flowers. As a table group this firm exhibited Hippeastrums, a large number of Primula obconica, in batches of distinct shades, and Nemesias. (Silver-gilt Banksian.)

Messrs. Sutton & Sons, Reading, exhibited excellent plants of Cineraria in shades of blue, pink, rose and other colours. This fine group presented a bank of showy colours, and was a great attraction. (Silver Banksian Medal.)

Messrs. S. Bide & Sons, Ltd., Farnham, Surrey, exhibited a group of a salmon-coloured Zonal-leaved Pelargonium, stated to be a sport from West Brighton Gem variety.

Messrs. H. J. Jones, Ltd., Hither Green, Lewisham, showed bunches of Zonal-leaved Pelargoniums. Outstanding varieties were R. Hattaway, with exceptionally large flowers of a fine shade of red; Arabic, scarlet; Mrs. Gulliver Improved, pale pink; and Harry, scarlet.

Messrs. H. Cannell & Sons, Swanley, also staged bunches of Zonal-leaved Pelargoniums in great variety. (Silver Banksian Medal.)

Mr. H. Burnett, Guernsey, was awarded a Silver Flora Medal for a superb exhibit of Carnations of the perpetual-blooming type, and Messrs. Allwood Bros., Wivelsfield, contributed choice blooms of a similar type.

Messrs. R. Gill & Sons, Tremough, Penryn, Cornwall, showed trusses of Rhododendrons, sprays of Embothrium coccineum, Berberis Darwinii, Myosotidium nobile, Primula Wattii, with violet-purple flowers, and P. Winteri. (Bronze Banksian Medal.)

From the Royal Botanic Gardens, Edinburgh, were staged numerous species of Primula, including many recently introduced from China. The most notable was P. Reidii, with a head of white, spreading, hanging flowers, the plant having a white farina. P. pinnatifida has small violet-coloured flowers in a cluster and very attractive foliage, from which the specific name is derived. P. pulchella has beautiful, lilac-coloured blossoms and those of P. polyneura are a rosy-purple.

Mr. James Douglas, Great Bookham, Surrey, staged 100 fine plants of Alpine and show Auriculas. The finest varieties were Phyllis Douglas, purple; Mrs. James Douglas, of similar colour, perfect in form; and Lady Veitch, terra-cotta. (Silver Banksian Medal.)

Messrs. G. & A. Clark, Ltd., Dover, were awarded a Bronze Banksian Medal for an exhibit of Alpines and hardy flowers. It was arranged as a bank sloping at one end, with stones and a foreground of grass, in which were beds furnished with Anemone coronaria. On the bank were great masses of a beautiful yellow Polyanthus, and, on the top, amidst other flowers, a new Anchusa named Pride of Dover, with flowers a little deeper in shade than opal.

Mr. James Box, Haywards Heath, Sussex, filled a corner of the hall with a group of Alpines arranged on a bold rockery. A conspicuous plant was a salmon-tinted variety of Primula japonica; another interesting Primula was a hybrid between P. malacoides and P. Veitchii, raised by M. Lemoine. Other plants of special interest were Dendromecon rigidum, Androsace arachnoides and Helichrysum bellidifolium. (Silver Banksian Medal.)

The Wargrave Plant Farm, Ltd., Twyford, Berkshire, exhibited a rockery, the weathered limestone used in its construction being splendid for the purpose. It was furnished with Primula frondosa, a large breadth of Aubrietia Lloyd Edwards, Gentiana verna, the pretty Viola bosniaca, with dark rose-coloured flowers shading to paler rose at the base; Iris Susiana and other choice flowers. (Bronze Banksian Medal.)

Rock-garden exhibits were also shown by Messrs. Barr & Sons, King Street, Covent Garden, in which we noticed the old, but scarce, double yellow Auricula (Bronze Banksian Medal); Messrs. J. Peed & Son, West Norwood; T. S. Ware, Ltd., Feltham (Bronze Flora Medal); Messrs. J. Cheal & Sons, Crawley; Mr. Clarence Elliott, Six Hills Nursery, Stevenage; and Messrs. R. Wallace & Co., Colchester.

Mr. G. Reuthe, Keston, Kent, exhibited numerous pots of Alpines, trusses of Rhododendrons and uncommon shrubs. Amongst the more interesting subjects were Pentapterygium serpens, with long sprays of red flowers like those of an Epacris; Rhododendron Elsœ, having a resemblance to R. argenteum; R. arboreum rubrum nigrescens, the darkest flowered Rhododendron; Edwardsia grandiflora; and Saxifraga Reuthei. (Bronze Banksian Medal.)

Mr. H. Hemsley, Crawley, staged various Alpine plants in pots. The beautiful Androsace Chumbyi, Viola gracilis, Myosotis Marie Raphael, with a white line through each petal; Romanzoffia sitchensis, a dainty white flower with a dark eye.

Messrs. Reamsbottom & Co., Geashill, Co. Down, Ireland, showed St. Brigid Anemones in numerous varieties of colours. (Bronze Banksian Medal.)

Hardy flowers in season were also contributed by Messrs. George Jackman & Son, Woking; Messrs. Whitelegg & Page, Chislehurst, Kent; Messrs. Bakers, Wolverhampton; Mr. Edwin C. Bowells, Cheltenham; Mr. M. Prichard, Christchurch, Hampshire (Silver Flora Medal); and Mr. G. W. Miller, Clarkson Nurseries, Wisbech.

Messrs. Blackmore & Langdon, Twerton Hill Nursery, Bath, showed large-flowered Polyanthuses in maroon, yellow and white varieties.

Mrs. Berkeley, Spetchley, was awarded a Silver Flora Medal for Polyanthuses and Primroses of an improved strain.

Messrs. Phillips & Taylor, Bracknell, Berkshire, were the exhibitors of Auriculas, the group having as a border a row of Primula rosea and a centre-piece formed of P. denticulata. (Bronze Banksian Medal.)

Mr. R. d'E. Day, Sutton Scotney, staged vases of Spanish Irises. (Bronze Banksian Medal.)

Orchid Committee.

Present: J. Gurney Fowler, Esq. (in the chair), and Messrs. Jas. O'Brien (hon. sec.), Gurney Wilson, J. Wilson Potter, W. Thompson, F. Sander, F. J. Hanbury, W. Cobb, F. M. Ogilvie, A. McBean, T. Armstrong, J. Charlesworth, H. A. Hatcher, J. E. Shill, H. G. Alexander, W. P. Bound, A. Dye, W. H. White, C. J. Lucas, S. W. Flory, W. Bolton, C. Cookson, J. S. Moss, De B. Crawshay, Sir Jeremiah Colman, Bart., and Sir Harry J. Veitch.

The Orchids were arranged in the annexe, the certificated plants being roped off and in the charge of a custodian, following a new rule set up by the Council in consequence of the reported theft of pollen on previous occasions.

Messrs. Charlesworth & Co., Haywards Heath, were awarded a Silver Flora Medal for a group of interesting species and hybrids, the centre being Phalænopsis Aphrodite with scarlet Odontioda Charlesworthii, and other Odontiodas. The Lælio-Cattleyas were L. C. Larissa, a pretty Primrose-yellow flower; L. C. Dominiana, of rich colour; L. C. Prospero, and other showy kinds. The white Brasso-Cattleya Queen Alexandra, the pretty Miltonioda Ajax, Epi-Lælia macrocinnabarina, Odontoglossum eximium varieties, and O. Jasper, were also noted.

Messrs. Sander & Sons, St. Albans, were awarded a Silver Flora Medal for an effective and interesting group which included the singular new species Maxillaria Fletcherianum (see Awards). Among hybrids, Lælio-Cattleya Trimyra had pretty yellow flowers; L. C. Wittiana was very distinct; L. C. Dreadnought had a fine bloom of rich colour; and various other showy kinds were staged. Also good forms of finely-blotched hybrid Odontoglossums, some exceptionally fine O. crispum and O. eximium, one remarkable form having reverted to typical O. crispum, and was scarcely distinguishable from one of the finest typical white forms of that species.

E. H. Davidson, Esq., Twyford, secured a Silver Flora Medal for a neat group of well grown specimens, the central plant being a superb form of Odontoglossum crispum with a perfectly-shaped flower, having a large claret-coloured blotch in the middle of each segment. The plant bore a fine spike of fourteen flowers. Some hybrids of Odontoglossum Rossii, various hybrid Odontoglossums, including the pretty O. Dora, bright scarlet Odontioda Charlesworthii, a very handsome Lælio-Cattleya Aphrodite, and the bright rose Miltonia vexillaria Empress Augusta Victoria were also noted.

Mr. Sidney Flory, Orchid Nursery, Amyand Park Road, Twickenham, was awarded a Silver Flora Medal for a good group, in which the forms of Cattleya Schroderæ were very attractive, and included a pretty variety with nine flowers. With them were good Odontoglossum crispum, the White Cattleya intermedia Parthenia, Chysis bractescens, Odontiodas, several Cymbidium eburneum, one being a very singular blush-white variety; Cœlogyne Micholitzii, Acanthophippium sylhetense, etc.

Messrs. Hassall & Co., Southgate, secured a Silver Banksian Medal for a group, principally of the fine white Trichopilia Hennisiana (Back-

housiana), a charming species like a pure-white Trichopilia suavis. The disc of the lip is yellow and the flowers delicately fragrant. Miltonia Bleuana, Odontoglossum percultum and others were also arranged in the group.

H. S. GOODSON, Esq., Fairlawn, Putney (gr. Mr. G. E. Day), was awarded a Silver Banksian Medal for a group containing six specimens of Cattleya intermedia alba, several Odontoglossums, including the handsomely-blotched O. crispum President Fallières, some brightly-coloured Odontiodas, and scarlet Masdevallia ignea.

Mr. C. F. WATERS, Balcombe, was awarded a Bronze Banksian Medal for a small group of good varieties of Lycaste Skinneri, varying from pale pink to rose and with differently-coloured labellums. With these were Cattleya Mendelii and Odontoglossums.

Lieut.-Col. Sir GEO. L. HOLFORD, K.C.V.O., Westonbirt (gr. Mr. H. G. Alexander), sent Odontioda Bradshawiæ Holford's variety, a large scarlet flower, a noble specimen of the beautiful Cattleya Schroderæ The Baron, and two other exceptionally good novelties (see Awards).

Sir TREVOR LAWRENCE, Bart, K.C.V.O., Burford (gr. Mr. W. H. White), sent the pretty Brasso-Lælio-Cattleya Triune (L. C. Hyeana × B. C. Digbyano-Schroderæ), of good shape, yellowish-white, tinged with lilac, the lip having a purplish front.

WILLIAM THOMPSON, Esq., Walton Grange, Stone, sent Odontioda William Thompson, a good flower of a deep mauve colour; Odontoglossum Ilene and O. Princess Mary, finely blotched hybrids of unknown parentage; the showily blotched O. crispum J. Howes, and O. Mrs. Thompson. (See Awards.)

F. M. OGILVIE, Esq., The Shrubbery, Oxford, sent as Odontioda Devossiana the reverse cross to the original scarlet form, and which appeared to differ little from Odontoglossum Thompsonii. The plant was finely grown, and a Cultural Commendation was voted to Mr. Balmforth, the grower.

W. R. LEE, Esq., Plumpton Hall, Heywood (gr. Mr. Branch) sent Odontioda Bradshawiæ Hestia, a superb form with flowers as those of Odontoglossum crispum, and beautifully coloured. The broad sepals and petals had the inner halves of a clear Indian-red colour, the tips and margins being white tinged with lilac, the white forming a band round the red lip, with a red blotch in front of the crest, the blade creamy white; and O. Evadne (parentage unknown), a very attractive flower with white ground tinged with rose, the basal part of the segments being red. Also the fine new Brasso-Lælio-Cattleya King Emperor. (See Awards).

J. GURNEY FOWLER, Esq., Glebelands, South Woodford (gr. Mr. J. Davis), sent Cattleya Robert de Wavrin "Fowler's variety," a large flower of fine shape, soft rose in colour.

PANTIA RALLI, Esq., Ashtead Park (gr. Mr. Farnes), showed Lælio-Cattleya Dominiana Ralli's variety, of fine rose colour with dark claret-coloured lip.

WALTER COBB, Esq., Normanhurst, Rusper (gr. Mr. C. J. Salter), sent Odontioda Bradshawiæ Cobb's variety.

ALWYN HARRISON, Esq., Oneglia, Italy, sent well-flowered Dendrobium crassinode and others.

G. EVANS, Esq., Shenstone (gr. Mr. Povey), sent a very well-flowered bluish-white Brasso-Cattleya.

Messrs. H. A. MCBEAN, Cooksbridge, showed finely-flowered Miltonia vexillaria Memoria G. D. Owen, a form of the yellow Cattleya Helius, C. Trimyra, and several others.

AWARDS.

FIRST-CLASS CERTIFICATES.

Brasso-Laelio-Cattleya King Emperor (*L.-C. Callistoglossa* × *B.-C. Digbyano-Mossiae*), from W. R. LEE, Esq., Plumpton Hall, Heywood (gr. Mr. Branch). A superb hybrid and the best of its class, the finely-shaped flowers measuring 8 inches across the broad petals, and 9 inches across the sepals, the flowers are white tinged with clear rose. The immense and openly-displayed lip is deep mauve-purple, the margin lighter and fringed; the disc yellow on white ground, the base marked with purple.

Odontoglossum Pescatorei Lady Holford, from Lieut.-Col. Sir GEO. L. HOLFORD, K.C.V.O., Westonbirt (gr. Mr. H. G. Alexander). By far the largest form of O. Pescatorei, over 3½ inches across, and of fine shape. Flowers, white with a slight lilac tint on the sepals, and an occasional small spot of crimson on one or other of the petals. The broad lip is pure white, with some ruby markings in front of the crest.

Laelio-Cattleya luminosa Holford's variety (*L. tenebrosa Walton Grange* × *C. Dowiana aurea*), from Lieut.-Col. Sir GEO. L. HOLFORD, K.C.V.O. The best of this well-known Westonbirt strain. Sepals and petals rich canary yellow. Lip deep vinous purple, with effective darker veining.

AWARDS OF MERIT.

Maxillaria Fletcheriana, from Messrs. SANDER & SONS, St. Albans. A remarkable new species from Peru; in the form of its flower and the size intermediate between M. Sanderiana and M. grandiflora, the broad segments favouring the former plant. The scapes are erect, with loose green sheaths, and each bears a large cream-white flower with thin purple lines. The singular lip is yellow with some purple markings.

Odontoglossum Mrs. Thompson (parentage unknown), from WILLIAM THOMPSON, Esq., Walton Grange. A very worthy hybrid, with large white flowers heavily blotched with violet colour, the front of the lip being pure white. The segments are fringed, and the white margins well display the flower.

Narcissus Committee.

Present: Walter T. Ware, Esq., in the chair; Messrs. W. B. Cranfield, P. Rudolph Barr, F. Barchard, H. V. Warrender, W. F. M. Copeland, W. W. Fowler, H. A. Denison, W. Goldring, Charles T. Digby, W. A. Milner, Henry Backhouse, Charles Dawson, Herbert Smith, F. Herbert Chapman, W. Poupart, Christopher Bourne, Arthur R. Goodwin, Alex. M. Wilson, Joseph Jacob, P. D. Williams, J. D. Pearson, W. Leak, and Chas. H. Curtis (hon. secretary).

Messrs. R. H. BATH, LTD., Wisbech, included a large number of excellent cluster varieties in their attractive exhibit. Nearly all the Polyanthus hybrids were unnamed, but most of them are of exceptional merit, and deserve permanent positions. Of the remainder of the stand the Incomparabilis forms deserve chief mention, and of these we select Bernardino, Flame, Orangeman, and Gloria Mundi as being amongst the best. Messrs. BATH also exhibited a large number of Darwin Tulips growing in comparatively shallow, undrained pans, of fibre. Such well-known varieties as Mrs. Farncombe Sanders, Flambeau, Suzon, Glow, Iris, Maiden's Blush, and Feu Brilliant were deserving of the highest praise. (Silver-Gilt Flora Medal.)

Messrs. BARR AND SONS, King Street, Covent Garden, London, arranged an exceedingly fine collection of Daffodils, in which we especially admired Horace, Dresden, Red Beacon, Dosoris, St. George (Barrii), Southern Gem, Sequin, Lord Kitchener, Gloria Mundi, Macebearer, Buccaneer, Zingara, Lord Roberts, Cleopatra, Monarch, and Weardale Perfection. (Silver-Gilt Flora Medal.)

Mr. ALEX. M. WILSON, Shovell, Bridgwater, included many very good blooms of the Barrii section in his exhibit, but most of them were unnamed. Amongst the large Trumpet varieties the most conspicuous were Herod and Centurion. Whisper, a variety which has a decided pale green eye, and Moonbeam are two very attractive Leedsii Daffodils. (Silver-Gilt Banksian Medal.)

A very comprehensive collection of Daffodils was shown by Mr. CHRISTOPHER BOURNE, Simpson, Bletchley, and the "eyes" of the varieties with bright coronas were exceptionally brilliant. Queen of Hearts, Symphony, Firebrand, Cœur de Lion, and Red Lady are a selection. Such Trumpet varieties as Weardale Perfection, Madame de Graaff, Cleopatra, and the cluster Narcissus Elvira were equally well shown. A smaller collection of excellent Tulips adjoined the Daffodils. (Silver Flora Medal.)

Messrs. SUTTON AND SONS, Reading, displayed comparatively few varieties, but these were of outstanding merit, and were massed attractively The Trumpet varieties were Golden King, Weardale Perfection, and two desirable yellow sorts shown under numbers. Amongst the blooms of the Incomparabilis section Lady Margaret Boscawen, Southern Gem, and Red Flag were especially good; whilst Red Crest and Apricot Queen were the pick of the Barrii type. (Silver Banksian Medal.)

Many of the Daffodils from the LISSADELL BULB FARM, Sligo, were shown under numbers and of these several are very beautiful, and promise to eclipse older varieties. Of the named sorts Incognita, Cresset (Barrii), and Ibis were shown in excellent condition. (Silver Banksian Medal.)

Messrs. JAMES CARTER AND CO., Raynes Park, massed a large number of Daffodils on a large undulating mound of fibre—an arrangement which well illustrated the value of the varieties employed. The hundred or more flowers of each of such Daffodils as Dazzler, Firebrand, Alba tross, Gloria Mundi, and Madame de Graaff made a fascinating display. (Silver Banksian Medal.)

ROBERT SYDENHAM, LTD., showed, in conjunction with the Anglesey Bulb Growers' Association, some charming Daffodils. Gold Coin and a similar Barrii variety, which has a more decided colour on the rim of the corona, Bright Eye (Poeticus), and White Frank (Leedsii) were particularly noteworthy. (Silver Banksian Medal.)

Messrs. J. R. PEARSON AND SONS, Chilwell Nurseries, Lowdham, made a feature of the large Trumpet and the Incomparabilis types. These included Van Waveren's Giant, Clara Butt, Florence Pearson, Noble, and several beautiful seedlings. Vases of the brilliantly coloured Firebrand and Scarlet were also excellent. (Silver Banksian Medal.)

Messrs. CARTWRIGHT AND GOODWIN, Kidderminster, arranged a fine collection of Daffodils with a restful groundwork of Isolepis gracilis in small pots. Southern Gem, Waterwitch, Edrington (Leedsii), Armorel, Circlet (Barrii), Robert Southwell, Matthew Arnold (Poeticus), and the Queen of Spain (Triandrus) were all very beautiful flowers. (Silver Banksian Medal.)

Messrs. JAMES VEITCH AND SONS, LTD., Chelsea, showed such sterling varieties as Red Crest, Cœur de Lion, Peveril (Barrii), Cardinal, Susannah (Incomparabilis), Horace (Poeticus), Glory of Leiden, Shakespeare, and Mrs. H. J. Veitch (Trumpet).

The WARGRAVE PLANT FARM, Twyford, Berkshire, had a small, but choice, assortment of Daffodils, including Primrose Phœnix, Red Beacon, Glitter, Fairy Queen, and Peter Barr.

Mr. H. HEMSLEY, Crawley, Sussex, included a collection of Daffodils in his rock-garden exhibit. The best of the Daffodils were Will Scarlet, Horace, Cygnet, and Lulworth.

As usual, the Rev. G. H. ENGLEHEART, Dinton, Salisbury, exhibited many fascinating seedling Daffodils under numbers. These blooms, most of them Poeticus and Barrii varieties, were splendid, but one cannot enthuse over prosaic figures.

Mrs. BACKHOUSE, Sutton Court, Herefordshire, also showed, not for competition, a collection of unnamed seedlings.

FIRST-CLASS CERTIFICATE.

Mrs. Ernst H. Krelage.—This especially fine Trumpet Daffodil received an Award of Merit a year ago, when it was considered to be the finest of the white varieties. On the present occasion it was shown in even better form than before, and received the higher award. The stout, overlapping perianth segments are creamy white, and the faint suspicion of yellow at the reflexed edges of the broad rim of the trumpet adds to its attraction. The large flowers are set at right angles to the stout stalks. Shown by Messrs. E. H. KRELAGE AND SON, Haarlem.

AWARDS OF MERIT.

Caedmon.—A magnificent Poetaz variety; the pure-white segments of the perianth are of good substance. The orange-coloured "eye" has a distinct crimson rim. Shown by Messrs. BARR AND SONS, Covent Garden.

St. Olaf.—The three vases of this splendid Leedsii Daffodil were the outstanding feature of Messrs. BARR'S stand. The white perianth segments are very large and round, and the frilled corona is attractively tinged with sulphur-yellow.

Europe.—A large Trumpet Daffodil, with erect flowers. The broad, firm perianth segments are nearly pure white, and the widely expanded, frilled trumpet is pale yellow in colour. Shown by Mr. W. T. WARE, Bath.

COMPETITIVE CLASSES FOR NARCISSI.

With a few exceptions, the classes in the special show of Daffodils were very keenly contested, and contained a large number of exceed

ingly fine blooms, which were staged in fresh and bright condition.

Open Classes.

The first class in the schedule was for collections of Daffodils in 48 varieties, representing the different divisions. Whilst the five collections contained a large number of highly meritorious blooms they could scarcely be said to be representative, inasmuch as the exhibitors mostly contented themselves with showing varieties of five of the eleven divisions into which the R.H.S. has classified the Daffodil. But although this class did not possess the educational value expected, nothing was left to be desired from a spectacular point of view. The first prize was awarded to Mr. E. M. Crosfield, Crossington House, Bridgwater, for a magnificent collection. Besides many promising seedlings, Hecla, Touchstone, Snow King (Poetaz varieties), Zouave, Durbar, Radiant, Gaybird (Barrii), Dictator, Lolah, Frostbound (Trumpet), and Whitewell (Incomparabilis) are probably the finest of this excellent exhibit; 2nd, Mr. F. H. Chapman, Rye, Sussex, who showed beautiful blooms of Mrs. H. J. Veitch, Monarch, Gloria Mundi, Sea Horse, and several seedlings of merit; 3rd, Mr. Christopher Bourne, Simpson, Bletchley, whose outstanding blooms were Sahara and Monarch.

The best exhibit in the class for twelve long Trumpet Daffodils was shown by Messrs. E. H. Krelage and Son, Haarlem, who staged superb examples of Thackery, Glory of Haarlem, Frans Hals, Hope of Holland (deep yellows), Mrs. Ernst Krelage and South Pole (white trumpets); 2nd, Messrs. Cartwright and Goodwin, Kidderminster, whose specimens of Mrs. H. J. Veitch, Master of Baliol, and Betsy were unusually good; 3rd, Mr. W. A. Watts, St. Asaph. Mr. W. A. Watts was awarded the first prize in the class for twelve Incomparabilis Daffodils, the varieties Lucifer, Whitewell, Bernardino, and Lady Margaret Boscawen were his premier blooms; 2nd, Messrs. Cartwright and Goodwin. The best twelve Barrii Daffodils were shown by Mr. C. Bourne; Queen of Hearts and Red Chief were unusually fine. 2nd, Mr. F. H. Chapman. Mr. C. Bourne also staged the finest Leedsii blooms, the varieties Lord Kitchener and Little Joan being excellent; 2nd, Messrs. Cartwright and Goodwin; 3rd, Mr. W. A. Watts. Of the nine Poeticus varieties which won the first prize for Mr. C. Bourne, the blooms of Acme and Horace were charming; 2nd, Mr. F. H. Chapman; 3rd, Mr. W. A. Watts.

There was no competition in the class for nine Daffodils to be selected from Divisions V., VI., and VII., and the exhibit of nine Polyanthus (Tazetta) Daffodils were of only moderate quality. The best blooms were shown by Messrs. Cartwright and Goodwin, Orient, Irene, and Scarlet Gem being the finer; 2nd, Mr. W. A. Watts. The varieties Elvira and Orient were the best in the class.

Mr. W. A. Watts, who included Primrose Phœnix and Golden Rose, won the first prize for six Double Daffodils; 2nd, Messrs. Cartwright and Goodwin.

Amateur Classes.

There was excellent competition in the premier class, which was for 24 varieties, and the first prize was won easily by Mr. N. G. Lower, Presteign. Bernardino, Gloria Mundi (Incomparabilis), Olympia, Glory of Leiden (large trumpet), Sunrise, Beacon, Barrii, Horace (Poeticus) were all splendid. 2nd, Mr. S. F. Stafferth, Frieston Priory, Boston, who showed very fine blooms of White Queen, Whitewell and Cigar; 3rd, Rev. T. Buncombe, Black Torrington, who won the first prize in the class for six Long Trumpet varieties with a praiseworthy collection, which included Sybil Foster and the Cloriel. 2nd, Mr. W. B. Cranfield, East Lodge, Enfield Chase; 3rd, Mr. S. F. Stafferth. The best six Incomparabilis varieties were shown by Mr. W. B. Cranfield, who staged Will Scarlet and Lady Margaret Boscawen in splendid condition; 2nd, Mr. H. R. Darlington, Park House, Potter's Bar.

The first prize for six Barrii varieties was awarded to Mr. S. F. Stafferth, in whose collection the outstanding blooms were Crown Prince and Glitter; 2nd, Mr. H. R. Darlington. In the first prize collection of six Leedsii varieties Mr. H. R. Darlington showed excellent blooms of White Countess and Selene; 2nd, Mr. S. F. Stafferth; 3rd, Rev. T. Buncombe.

The only exhibit of six Poeticus varieties was that of Mr. H. R. Darlington, and it deservedly received the first prize. There was no exhibit of six Hybrid Triandrus Daffodils, and Mr. H. R. Darlington, who showed very good blooms of Jaune à Merveille and Elvira, was the only exhibitor of six Polyanthus Daffodils. Mr. H. R. Darlington was also awarded first prize for three Double Daffodils; 2nd, Mr. W. B. Cranfield.

In Section III., which is restricted to amateurs who do not compete in the previous classes, Mr. R. Morton, Grange Dene, Woodside Park, was the most successful competitor. He won the first prize in the class for twelve Daffodils, distinct, staging excellent blooms of Great Warley, Lucifer and Bernardino. Mr. Morton also won the first prizes in the classes for Incomparabilis and Barrii Daffodils.

Seedling and New Daffodils.

These open classes, which with one exception provide for distinct varieties not in commerce, were well filled, and many of the blooms showed decided improvement on some of the older kinds.

In Class 32, which called for twelve Daffodils of distinct varieties, introduced into commerce during or since 1909, there was very keen competition, and the first prize was awarded to Mr. C. Bourne, whose best blooms were Golden King and Golden Idol (large trumpet), White Countess (Leedsii), Queen of Hearts, Miss Willmott, and Radiant (Barrii); 2nd, Mr. F. H. Chapman, whose best blooms were Rotherside and Equinox (Poeticus) and Memento (Barrii).

The first prize for twelve Daffodils was won by Mr. E. M. Crosfield, whose collection was rich in Barrii varieties, such as Touchstone, Ibex, and Charles Surface; the rich golden trumpeted Bayardo was also very fine. 2nd, Mr. W. Welchman, Upwell, Wisbech.

In the class for six Daffodils the best exhibit was shown by Mr. C. Bourne, whose varieties included Golden Idol and Barbara (trumpet); 2nd, Mr. W. A. Watts.

In the class for three Daffodils the second prize was awarded to Messrs. Cartwright and Goodwin.

Of the three exhibits of twelve hybrid Triandrus varieties the best was shown by Mr. E. M. Crosfield. The premier blooms were shown under numbers. 2nd, Mr. W. A. Watts. The finest three seedling Daffodils were shown by Mr. A. M. Wilson. Gascan is an enormous Barrii bloom. Anicet has a pale golden edge to its corona. 2nd, Mr. P. D. Williams, St. Keverne, Cornwall, who showed Susan, a small lemon-eyed bloom, and several very promising unnamed seedlings.

The three seedling Daffodils which won the first prize in Class 38 for Mr. W. A. Watts were St. Asaph, Mercury, and Aden; 2nd, Mr. T. Batson, Beaworthy, Devon.

Mr. W. Welchman, who showed a large, rich yellow bloom, won the first prize in the class for one Trumpet Daffodil not in commerce.

The first prize for a Trumpet Daffodil (Div. 1.B) was awarded to Mr. E. M. Crosfield, and a similar honour in Division I.C was accorded to Mr. P. D. Williams.

In the class for Div. A, Incomparabilis, Mr. A. M. Wilson won the first prize with Antony, an immense, richly-coloured bloom, and Mr. E. M. Crosfield, who showed Aladdin (white perianth, yellow trumpet), was the successful exhibitor of a Division II.B bloom.

Mr. A. M. Wilson was awarded the first prize in the class for Div. III.A for Harpagon, a broad frilled bloom with a fiery corona.

Mr. P. D. Williams, who showed Lysander, an exceedingly beautiful bloom, was the most successful exhibitor of a Division B Barrii bloom, and he also showed the best seedling Leedsii Daffodil.

Mr. E. M. Crosfield, who showed an unnamed seedling, won the first prize for a Hybrid Triandrus flower, and was similarly successful with the variety Bayardo in the class for a hybrid Jonquilla variety.

An unnamed Poetaz (Div. VIII.) of great merit won the first prize for Mr. P. D. Williams. Mr. A. M. Wilson was awarded the first prize for Raeburn in the class for a Poeticus (Div. IX.) Daffodil, and Mr. W. A. Watts was similarly successful with Whipped Cream in the class for Double varieties.

Fruit and Vegetable Committee.

Present: J. Cheal, Esq. (in the chair), Messrs. W. Bates, J. Davis, C. G. A. Nix, P. C. M. Veitch, and Owen Thomas.

Lady Wernher, Luton Hoo, Luton (gr., Mr. A. W. Metcalfe), exhibited Strawberries of the Royal Sovereign variety, for which a Silver Banksian Medal and a Cultural Commendation were awarded.

Messrs. Sutton & Sons, Reading, exhibited a collection of early vegetables and salads. Two fine Cabbages were shown in Harbinger and April, the former being the earlier. Baskets of Golden Ball Lettuces were remarkably good. Also the companion variety White Heart. Other fine vegetables were shown in Peas (Duchess of York and Hundredfold), Sutton Rhubarb, Cucumbers (Pride of the Market), Broccoli (Satisfaction), Potatos (Harbinger and May Queen), Early Market Tomato, and Seakale.

The Lecture.

The Rev. George Henslow delivered a lecture on the subject "Origin of Life: Why it is undiscoverable." Mr. Henslow criticised Professor Schafer's address to the British Association in 1912, showing that, in his words, "a crystal could grow, multiply, and reproduce itself, provided a fitted pabulum was given it," "growth" is a term applicable to living beings only, as it depends upon an internal supply of organised matter derived from food, whereas if a crystal of alum or other salt be put into a hot, saturated solution of the same substance it would increase in bulk by superficial addition only. Whatever be the amount of alum in solution, exactly the same would be found in the crystals after evaporation. Professor Schafer alluded to spontaneous motion as being regarded as a sign of life; but many apparently spontaneous movements occur in minerals as in a thermometer and barometer. While molecular motion results in ice crystals, etc., the cause being variation in temperature, and a vast number of movements in plant organs are due to the irritability of living protoplasm. For example, the sleep of plant leaves, the curvatures of opening buds in springtime, the turning of the shoots of Ivy and Ampelopsis to the darker side, etc. The lecturer also showed the hopelessness of a chemist ever making protoplasm in the laboratory, not merely on account of its extreme complexity of structure, but because of its powers of respiration, assimilation and transpiration. It has been assumed that as soon as a chemist had made protoplasm synthetically all these and other phenomena of life would appear, but a living thing, whether a microbe, zoospore, or a man, could be killed instantaneously, while the protoplasm remains of the same structure as before for a longer or shorter period. Lastly, there is a phenomenon too often overlooked, that is, the power to build up useful, purposeful, well-defined structures. How do they arise? All physical forces and matter are inanimate; life alone is the Director of forces, as Sir Oliver Lodge expresses it. Life guides or directs energy in the work of constructing cells, tissues, and organs, whether of plants or animals, and if the being is in a new environment, life alters and readapts the organs to the new conditions of life, and a new variety or species may be the result.

The Primula Conference.

The conference proceedings were held in the lecture room on Wednesday last. The chair was taken by Sir John T. D. Llewelyn, Bart., and there was a good attendance. Of the five papers only those by Professor Bayley Balfour on "Chinese Species of Primulas," Mr. Reginald Farrer on "European Hybrids in Nature," and Dr. John MacWatt on "European Primulas" were read by the authors; Miss Jekyll's paper on "Primulas from a Garden Point of View" was read by the Secretary. There was no time to read the paper by Mr. Craib on "Himalayan Primulas," but this will be published with the others in the Society's Journal. Dr. MacWatt and Professor Bayley-Balfour illustrated their remarks by means of lantern slides. Plants of various species of Primula were exhibited on the lecture table, kindly contributed by the Directors of the Royal Botanic Gardens at Kew and Edinburgh, by Mr. Reginald Farrer and Dr. MacWatt. There were also photographs of herbarium specimens

ROYAL CALEDONIAN HORTICULTURAL.

April 9-10.—Supplementing our notice of this society's spring show in the last issue, we now give the following further particulars :—

R. Brooman White, Esq., of Arddarroch, Garelochhead (gr., Mr. James Smith), was the only exhibitor in the class for a group of Orchids arranged in a space 12 feet by 6 feet, and he was awarded the first prize, which included the 25 guinea silver cup presented by Messrs. Sander and Sons, St. Albans. The exhibit was composed chiefly of Odontoglossums and Cypripediums.

Sir Robert Usher, Bart., Norton, Ratho (gr., Mr. George McKinna), won the first prize for four stove or greenhouse plants in flower; second, A. Drybrough, Esq., Gogar Park, Midlothian (gr., Mr. A. Findlay); third, the Earl of Home, K.T., Douglas Castle, (gr., Mr. A. McMillan). Sir Robert Usher also excelled in the class for six plants in bloom (excluding Hyacinths and Tulips). The Earl of Home was the only other entrant, and was awarded the second prize.

Lord Elphinstone, Carberry Tower, Musselburgh (gr., Mr. D. Kidd), was the only exhibitor in the class for two Greenhouse Rhododendrons, and he was awarded the first prize. Sir Robert Usher was awarded first prize for four hardy Rhododendrons.

There were five entries in the class for four plants of Azalea indica, and the Earl of Home carried off first honours, Colonel More Nisbett, The Drum, Midlothian, was placed second, and Sir R. Usher third. Lord Elphinstone, Sir Robert Usher, and the Earl of Home were awarded the first, second, and third prizes respectively for six hardy Azaleas.

In the Orchid classes, Sir A. B. Milne, Bart., Inveresk Gate, Musselburgh (gr., Mr. R. McAndie), was placed first for four plants; second, R. Hindle, Esq., Edinburgh (gr., Mr. Albert Jeffs); whilst for a single plant C. W. Cowan, Esq., Dalhousie Castle, Bonnyrigg (gr., Mr. W. G. Pirie), won the first prize and Sir A. B. Milne, Bart., the second prize.

Major Thorburn, Craigerne, Peebles (gr., Mr. J. McNeill), excelled in the class for three exotic ferns, the Earl of Home being second, and R. A. Robertson, Esq., Kirkland, Gogar (gr., Mr. Thos Hermiston), was placed first for three Adiantums. In the class for six hardy exotic ferns all the three entrants were disqualified on account of some of their plants being either not hardy or not exotic. Miss Balfour-Melville, Pilrig House, Edinburgh (gr., Mr. W. Robertson), won the first prize for six dwarf, hardy ferns.

In the classes for fine foliage plants, Mrs. Hutchison, Carlowrie, Kirkliston (gr., Mr. John Thom), was placed first for four plants (exclusive of Palms), and Sir Robert Usher second. Mrs. Hutchison also excelled in the class for six plants (excluding Palms), Sir Wilfrid Lawson being second. The Earl of Home showed the best six table plants; Mrs. Hutchison was first and Sir Robert Usher second for three Dracænas; and Sir Wilfrid Lawson was first and Mrs. Hutchison second for three Codiæums (Crotons).

For twelve Roses in pots in no fewer than six varieties there were three entrants, and the prizes were awarded in the following order :—First, Mrs. Hutchison; second, Mrs. Dewar, Drylaw House, Midlothian (gr., Mr. W. T. Galloway); third, Mrs. Fleming Hamilton, Craighlaw, Kirkcowan (gr., Mr. W. Young). Mrs. Hutchison was also awarded the first prize for six H. P. Roses in not fewer than three varieties and for six H. T. Roses.

P. Roy Geddes, Esq., Parkneuk, Colinton (gr., Mr. Jas. Todd), excelled for four pots of Amaryllis, and Mrs. Hog, Gogar Burn, Midlothian, won the 1st prize for four Ivy-leaved Pelargoniums, four show Pelargoniums, and for six large-flowered Cinerarias. Colonel More Nisbett won the first prize for four Zonal-leaved Pelargoniums; the Right Hon. R. C. Munro Ferguson, M.P., Raith House, Kirkcaldy (gr., Mr. D. McLean), for four Caladiums; and Viscount Maitland, Earlston Castle, Lauder (gr., Mr. R. Stuart), for six plants of Cineraria stellata.

Alex. Cowan, Esq., was first for Japanese Maples. Mrs. Dewar was first for Deutzia and for three specimens of Viburnum plicatum; and Sir Robert Usher was first for two Deutzias, for three Guelder Roses, and for three Lilacs; while Major Thorburn excelled for two Hydrangeas.

In the Primula classes, Mrs. Hog was first for six pots of P. obconica; M. G. Thorburn, Esq., for six pots of P. Sieboldii and six pots single varieties of P. vulgaris; Miss Balfour-Melville for six P. japonica, and for six distinct species (for which she was the only entrant), the latter including P. rosea, P. helvetica (seedling No. 1), P. nivalis, P. frondosa, P. Forbesii, and P. mollis.

Alpine plants were very interesting. For twenty-four distinct kinds C. W. Cowan, Esq., and M. G. Thorburn, Esq., entered, and were awarded the first and second prizes respectively. There were four entrants for six kinds, and Mr. Cowan was again first, Alex. Cowan, Esq., being second, and Mrs. Thorburn third.

Sir John Gilmour, Bart., of Montrave (gr., Mr. James Wilson), was placed first for six pots of Polyanthus Narcissi, for six pots of Garden Narcissi, and also for six pots of Tulips and two pots of Hyacinths.

Cut Flowers.

The Cut Flowers were quite up to the usual standard of excellence for these shows, and in most of the classes there was good competition.

For twelve bunches of Narcissi, not fewer than six kinds, C. W. Cowan, Esq., was placed first, and the Earl of Home, the only other exhibitor, second.

Mrs. Fleming Hamilton excelled for twenty-four Roses in not fewer than eight varieties. The only other entrant was Sir Geo. Bullough, Kinloch Castle, Rhum (gr. Mr. P. R. Hills), who was placed second. There were three entrants for twelve blooms, in not fewer than six varieties, and the prizes were awarded as follows :—1st, Lord Elphinstone; 2nd, Mrs. Fleming Hamilton; 3rd, Sir G. Bullough.

Mrs. Callander, Cramond House, Midlothian (gr. Mr. D. Fraser), showed the best twelve blooms of Gloire de Dijon; T. G. Bishop, Esq., Helensburgh (gr. Mr. John Hood), the best twelve blooms of Maréchal Niel; and C. W. Cowan, Esq., the best twelve blooms of any variety other than those named.

Lord Stratheden and Campbell, Hartrigge, Jedburgh, took first honours for three vases of Souvenir de la Malmaison Carnations, and for two vases of Carnations exclusive of "Malmaisons." Sir John Gilmour excelled for four vases of Carnations.

Lord Elphinstone won the first prize for three vases of Parrot Tulips; and the Right Hon. R. C. Munro Ferguson for three and six cases respectively of any other kind of Tulips.

There were four entrants for the Decorated Dinner Table, 10 feet by 5 feet, and the 1st, 2nd and 3rd prizes were awarded to Sir John Gilmour, T. G. Bishop, Esq., and Lord Elphinstone respectively. Perpetual-flowering Carnations were the flowers used in the cases of the 1st and 2nd prize tables.

Fruit and Vegetables.

There were only two classes for fruit—Strawberries and bottled fruit—and the Right Hon. A. J. Balfour, M.P., Whittinghame, East Lothian (gr. Mr. G. Anderson), was an easy first in the former class with fine berries of Royal Sovereign. Mrs. N. Hamilton Ogilvy, Archerfield, East Lothian (gr. Thos. McPhail), excelled for six bottles of preserved fruit.

Viscount Maitland and Lord Elphinstone were the only entrants in the class for the collection of six distinct kinds of vegetables, and were awarded the 1st and 2nd prizes respectively. Viscount Maitland also excelled for a collection of salad plants.

Under-Gardeners' Plan Competition.

For a plan for laying out 32 acres for pleasure ground, garden, etc., there were three entrants, namely, Mr. Hugh G. Oliver, Royal Botanic Garden, Edinburgh; Mr. J. W. Forsyth, Markyate Cell, Herts; and Mr. Archd. Macey, Godington Gardens, Ashford, Kent; and the 1st, 2nd and 3rd prizes were awarded in the order given.

PERPETUAL-FLOWERING CARNATION.

April 10, 11.—The fourteenth exhibition of this society was held in the Winter Hall, Royal Leamington Spa, on these dates. Leamington was a wise choice for the first provincial show of the Society, and great assistance was ren dered by the Mayor (Councillor W. W. Donald) Alderman Holt, the Town Clerk, and other mem bers of the local committee to make the show a success. The large hall was filled with ex hibits, and the quality of the blooms was of the highest order. The show was opened by the Mayoress, who was supported by the Mayor and Corporation of Leamington, and officers of the Perpetual-Flowering Carnation Society. The attendance was excellent.

Open Classes.

There were two entries in the class for a semi-circular group of cut Carnations, arranged on a floor space against a wall. The first prize, which included a Silver Cup, presented by the American Florists, was won by Mr. C. Engelmann, Saffron Walden, the greatest feature of whose group was the splendid pyramidal stand of the variety Lady Northcliffe, arranged in the centre at the back. Messrs. W. Wells & Co., Merstham, Surrey, followed closely.

The "Brunton" Challenge Cup for British-raised novelties distributed since January 1, 1911, was also won by Mr. C. Engelmann, with the varieties My Rose, British Triumph and Lady Northcliffe.

The American Challenge Cup offered for three vases of twelve blooms each of American novelties was secured by Mr. W. H. Page, of Hampton, Middlesex, with well-grown blooms of Gloriosa, White Wonder and Rosepink Enchantress, Mr. C. Engelmann being 2nd with Benora, White Wonder and Canary Bird.

A specially interesting and new feature was a class for seven vases of flowers of distinct varieties, 25 blooms of each sort. Mr. C. Engelmann proved successful with grand flowers of Benora, My Rose, Triumph, Sunstar, Lady Northcliffe, Carola and Lady Meyer. Col. F. W. Rideout, Clury Nurseries, Langley, was placed 2nd.

Mr. W. H. Page excelled in the class for five vases, distinct, 25 blooms in each vase, showing White Wonder, Gloriosa and Enchantress excellently well; 2nd, Sir Randolf L. Baker, Bt., M.P., Ranston, Blandford (gr. A. E. Usher); 3rd, Mr. H. J. Dudney, Erith. For three vases, distinct, Mr. H. T. Mason, Rectory Farm, Hampton, was the successful exhibitor; 2nd, Mr. E. Guile, Newport Nurseries, Essex. The blooms of Lady Meyer, shown by Mr. Guile, were of good size and quality, and were awarded a special prize, being adjudged the best vase in Classes 4 to 7, inclusive. The same exhibitor, with this variety, won the first prize in the class for a single vase of 25 blooms.

The class for one large vase containing 50 blooms of one variety was very popular with visitors. There were five entries. Mr. H. T. Mason being placed first with Beacon, Mr. C. Engelmann, second with Carola, and Col. Rideout third with Mikado.

Messrs. Perkins & Son, Coventry, secured the leading award in the class for a basket of Carnations, arranged for decorative effect, with any foliage. This firm also excelled in the classes for bouquets of Carnations.

For seven vases of Carnations, of distinct varieties, seven blooms in each vase, Sir Randolf L. Baker was placed first; a splendid vase of the variety R. F. Felton was awarded a special prize as being the best vase in Classes 21-25, inclusive. Other good blooms were Triumph, White Perfection, Baroness de Brienen, Scarlet Glow, Gloriosa and Rosea.

Sir Randolf Baker also excelled in the class for one vase of Carnations with the variety Carola.

The "Wells" Silver Challenge Cup was won by Sir Randolf Baker for the varieties Wodenethe and White House. The Bush Hill Challenge Cup was also secured by the same exhibitor with Baroness de Brienen, Rival, Mrs. J. M. Crook, Lady Alington, Colossus, and Marchioness of Linlithgow

Sir Randolf Baker, Bart., secured leading honours in the classes for six and for twelve plants in bloom. The "Engelmann" Novelty Challenge Cup was awarded as the first prize in the class for twelve plants. Mr. T. C. Loosemore showed the best single plant in bloom.

Mrs. J. Fenwick, J. B. Ackroyd, Esq., Miss Lillias Hamilton, and Mr. H. Cleaver were the prize winners in the classes open to Warwickshire.

NURSERYMEN, MARKET GARDENERS' AND GENERAL HAILSTORM INSURANCE CORPORATION, LIMITED.

April 4.—The eighteenth annual general meeting of shareholders of this company was held on the 4th inst., at the registered offices, 41 and 42, King Street, Covent Garden.

The Chairman (Sir Harry J. Veitch) presided, and reported that during the year the company had received five claims for 212 glass-houses damaged. In one nursery 93 out of 100 glass-houses were affected. The income from premiums amounted to £2,579, less bonus of 15 per cent. to the assured £387 11s. 7d., giving a nett premium income of £2,191 17s. 1d. The amount received from interest and ground rents amounted to £962 19s. 7d. A dividend of 1s. 6d. and a bonus of 6d. per share, free of income tax, was declared. The sum of £1,300 was added to the reserve fund, making the reserves £20,500, and the balance carried forward. Messrs. Robert Piper, Joseph Rochford, Edmund Rochford, and William Sams were re-elected directors.

CORNWALL DAFFODIL AND SPRING FLOWER.

April 8.—The annual exhibition of the above Society, which is under the patronage of Her Majesty Queen Mary and Her Majesty Queen Alexandra, was held in the great Market Hall at Truro. The general arrangements were again excellently carried out under the superintendence of the hon. secretary, the Hon. John Boscawen, who has held that position ever since the inception of the Society. The season is such an extremely early one that the majority of the Narcissi were past their best at the date of the show and in consequence there was no exhibit in the class for 30 varieties of Daffodils. This was a great disappointment to visitors, as the competition between Mr. J. C. Williams and Mr. P. D. Williams has always been very keen and many excellent flowers have been exhibited. An extremely high order of merit was, however, displayed in the class for a group of out-door, unforced hardwood flowering shrubs, no fewer than three medals being awarded in this class, and the deputation from the Royal Horticultural Society was astonished at the beauty and rarity of many of the subjects staged.

In the class for a collection of 30 varieties in commerce, the 1st prize was awarded to Mrs. Soltan-Symons, on whose stand were fine examples of Castile, Beacon, Ibis, Cavalier, Whitewell, Maggie May, Incognita, and Cœur de Lion. This exhibit was awarded a Silver Banksian Medal. In the class for 30 varieties of Daffodil, in commerce or not in commerce, the 1st prize was won by Lady Margaret Boscawen, whose flowers of Flamingo, Blood Orange, Dorothy Kingsmill, Will Scarlet and Cornish Cream were very good. For 9 distinct varieties of Trumpet Daffodils, the 1st prize was won by Mrs. Soltan-Symons, who showed Emperor, Weardale Perfection, Mrs. Crosfield, Madame de Graaff, Fairy and J. B. M. Camm. For 9 varieties of Incomparabilis varieties, the 1st prize was won by Mrs. Soltan-Symons with Lady Margaret Boscawen, Lucifer, Will Scarlet, Noble, Strongbow and Whitewell. For 6 varieties of the Barrii type, the 1st prize was awarded to Miss Clarice Vivian, who showed Wheatear, Greeneye, Stonechat, Ptarmigan, Beacon and Peveril. The best exhibit of 6 varieties of Leedsii Narcissus were shown by Mrs. Soltan-Symons, who staged Maggie May, White Lady, Mrs. Langtry, Citron, Eoster and Duchess of Westminster. For 3 varieties of Narcissus poeticus, the 1st prize was won by Miss Clarice Vivian, who showed Horace, Comus and Cassandra. For 15 distinct varieties, Mrs. Soltan-Symons excelled. The finest single bloom of a Trumpet Daffodil was Monarch, shown by Miss Mabel Williams, with Madame de Graaff and Monarch following. Mrs. Soltan-Symons showed the finest Incomparabilis variety in Lady Margaret Boscawen, the finest Barrii in Cavalier, the finest Leedsii in White Lady, and the finest Triandrus and Cyclamineus hybrid in Dorothy Kingsmill. The 1st prize for the best flower of a Poeticus variety was won by Miss Mabel Williams with Cassandra. For 15 varieties, in commerce or not in commerce, the 1st prize was awarded to Mr. J. C. Williams for a beautiful stand in which exceptionally fine varieties were No. 312 (primrose perianth, spreading orange crown), No. 218 (white perianth, flat yellow crown, edged orange-scarlet), X.3 (creamy perianth, pale yellow straight cup), and B.5 (white perianth and almost scarlet cup). Mr. P. D. Williams won the 2nd prize with an almost equally good collection, in which Moonbeam (with white perianth and small white cup) and Snow King (a very large white trumpet) were excellent. In this class and the following there was no limit to the price of the bulb, as there is in the earlier classes. For the finest single bloom of a Trumpet Daffodil, the 1st prize was won by Mr. P. D. Williams with Princess Cleopatra. The finest Incomparabilis was Chaffinch, shown by Miss Clarice Vivian, who also showed the best Barrii variety in Wheatear. Other 1st prize winners in these classes were (Leedsii) Miss L. Williams, with Lavender; (Triandrus and Cyclamineus hybrids) Mrs. Soltan-Symons, with Countess Grey; (Poeticus) Mr. P. D. Williams, with Snow King.

For a collection of hardy spring flowers, the 1st prize was won by Mr. P. D. Williams with Primula Forrestii, Anemone blanda rosea, Erythronium revolutum, E. Johnstonii, Anemone bracteata flore pleno, Epimedium sulphurcum, Primula denticulata, Tulipa retroflexa, Ourisia macrophylla (Award of Merit), Caltha platypetala, Muscari Heavenly Blue and hybrid Narcissus between Minnie Hume and N. triandrus. All the 1st prizes for Violets were won by Col. the Hon. H. F. Treffusis. For 6 vases of Roses and 3 vases, Mr. A. Blenkinsop won the 1st prize. In the class for a group of Rhododendron trusses, Mr. J. C. Williams won the 1st prize with a fine collection of hybrids, and was awarded a Silver-gilt Flora Medal. For 3 large jars of sprays of Rhododendrons, Mr. R. Fox was placed first. For a group of hardwood flowering shrubs, the 1st prize and a Silver-gilt Banksian Medal was awarded to Rev. A. T. Boscawen, whose stand contained Pyrus japonica, P. j. alba, Erica mediterranea, Pittosporum eugenioides, Correa magnifica, Fuchsia cordifolia, Andromeda acuminata, Viburnum Carlesii, Pernettya ciliaris (Award of Merit), Ceanothus rigidus, Pentapterygium rugosum (Award of Merit), Cytisus albus, Acacia verticillata, Veronica macrocarpa, Prostanthera violacea, Boronia heterophylla, Stauntonia latifolia, Erica melanthera, Spiræa arguta and Ribes speciosum. For 6 varieties of hardwood flowering shrubs, the 1st prize was won by Mr. P. D. Williams.

Non-Competitive Exhibits.

Messrs. R. Veitch & Son, Exeter, provided a most attractive stand, in which were included Winter-flowering Carnations, Lilacs, Genista Kewensis, Wahlenbergia gentianoides, Primula Forrestii, Magnolias, Osmanthus Delavayi and Psoralea arborea (Silver Flora Medal). The Devon Rosery Co., Torquay, had a splendid collection of Roses in pots in full flower (Silver Banksian Medal). They also showed flowering shrubs. Mr. G. Reuthe, Keston, Kent, was awarded a Silver Flora Medal for hardy plants. Messrs. Barr & Sons, King Street, Covent Garden, provided a splendid display of Daffodils. An Award of Merit was given to the variety Venus (Silver-gilt Flora Medal). Mr. C. Bourne, Bletchley, was awarded a Silver-gilt Flora Medal for Daffodils. Mr. J. C. Martin also showed Daffodils, and was awarded a Silver Banksian Medal. The variety Silver Penny was given an Award of Merit. Messrs. Treseder, Truro, showed very large specimens of Dicksonia antarctica, Acacias, Eriostemon neriifolium, Iberis gibraltarica, Indigofera australis and Cyrtomium Rochfordii.

One of the most interesting features in the exhibition was a collection of rare shrubs, contributed by Mr. T. A. Dorrien-Smith, of Tresco Abbey, Isles of Scilly. They included a number of rare Pittosporums, amongst which were P. eugenioides, P. undulatum, P. umbellatum, P. bicolor, P. cornifolium, P. Mavi, P. Colensoi, P. Ralphii, P. Tobira variegata, P. tenuifolium and P. crassifolium. Other plants were Correa virens, C. ventricosa, C. cardinalis, C. magnifica, C. Harrisii, C. alba, C. bicolor; Acacia Bartheriana, A. verticillata, A. cyanophylla, Fuchsia excorticata, F. cordifolia, F. serratifolia, Arctotis arborescens, A. aureola, Brachyglottis repanda, Sophora grandiflora, Grevillea Thelemanniana, G. sulphurea, G. alpina, G. rosmarinifolia, Coleonema album, Beschorneria yuccoides, Sedum arboreum, Kennedya nigricans, Psorallea affinis, Echium callithyrsum and two hybrid Echiums, Agonis marginata, Illicium anisatum, Leucopogon lanceolatus. This stand was awarded a Gold Medal. Rev. A. T. Boscawen received a First-Class Certificate for Grevillea Hookeriana bearing scarlet flowers.

IRISH GARDENERS' ASSOCIATION AND BENEVOLENT.

The report and balance sheet of this society has lately been issued, and shows a very favourable state of affairs. Several well-attended lectures have been given during the past year by expert horticulturists, and the membership of the society has increased considerably, chiefly by reason of the Association being now an approved society under the Insurance Act.

ROYAL HORTICULTURAL OF IRELAND.

A meeting of this Society was held recently in the Society's rooms, Molesworth Street, Dublin, Alderman Bewley presiding. A letter was read from Lord Iveagh granting the use of the gardens and grounds of his town residence for the autumn show. The hon. secretary, Sir F. Moore, read communications from the Lord Lieutenant intimating his intention to visit the spring show, to be held in conjunction with the Royal Dublin Society's show at Ballsbridge. A Cultural Certificate was awarded to Dr. Harriss Hilliney for twenty-six varieties of Daffodils. Messrs. Ramsay and Sons, Ballsbridge, showed exceedingly fine Tulips and Daffodils

THE WEATHER.

GENERAL REMARKS.

April 15, 1913.

Weather.—Early in the week the conditions were dry generally, and in some parts of Ireland and the south-west of England no material change occurred later. Over the kingdom, as a whole, however, rain or snow was experienced. In the northern and eastern parts of Britain the snowfall on Friday was heavy, measuring when melted about 0.5 inches of water.

Temperature was slightly above the normal in Ireland, below it elsewhere, the deficit being about 3° in England E., S.E., and the Midland Counties, and nearly as much in England N.E. The lowest grass readings were 19° at Llangammarch Wells, 21° at Worksop, and 22° at Birmingham and Blackpool. Over the kingdom as a whole the temperature of the soil was a little below the average at a depth of 1 foot, but above it at a depth of 4 feet.

Rainfall exceeded the average in the eastern half of England, but was less elsewhere. In Ireland S. and at most places in England S.W. the fall was very slight. At Waterford, Cahir, Scilly and Newquay no rain was experienced.

Bright Sunshine was a little above the normal in Ireland, where the daily mean was 5.5 hours or more, but much below it elsewhere. In the north and north-east of Britain the daily mean was only 1.7 hours, and the percentage of the possible duration 12 or 13. In Ireland N. the percentage was 40, and in Ireland S. it was as high as 43.

THE WEATHER IN WEST HERTS.

Week ending April 16.

One very cold night.—This was the most unseasonably cold week since the end of November, or for 19 weeks. On the coldest day the temperature in the thermometer screen at no time rose above 42°—which is 12° lower than is seasonable, and on the coldest night the exposed thermometer registered 16° of frost. With one exception (1912), when the temperature was the same, this was the greatest cold recorded here in April since 1893, or for twenty years. The ground is now about 2° colder than is seasonable, both at one and two feet deep. Rain fell on five days, and to the total depth of nearly an inch. Snow fell in the day-time throughout the greater part of the 11th, but as during most of that time the flakes melted on reaching the ground, it never lay to the depth of more than 1½ inches, and then only on the grass. The sun shone on an average for only 1¾ hours a day, or for as much as 3½ hours a day short of the usual duration for the middle of April. On the one bright day the sun shone for 6¾ hours, but on two days it was shining for less than an hour, and on two other days no sunshine at all was recorded. Light airs, as a rule, prevailed, the direction being from some northerly point in the early part of the week, and afterwards some southerly point of the compass. The mean amount of moisture in the air at 3 p.m. exceeded a seasonable quantity for that hour by as much as 9 per cent. A wild Cherry tree growing in my garden came first into flower on the 14th inst., which is four days earlier than its average date for the previous twenty-seven years, but ten days later than last year. *E. M., Berkhamsted, April 16, 1913.*

MARKETS.

COVENT GARDEN, April 16.

Fruit: Average Wholesale Prices.

	s.d.	s.d.
Apples, English:		
— Cooking, per bushel	4 0	7 0
— French Russets, box	7 0	8 6
— Canadian, brls.	16 0	25 0
— Wenatchee, p. case	7 6	10 6
— American, brls.	26 0	36 0
— Californian Newtowns, pr. case	7 0	8 0
— Nova Scotian, per barrel	14 6	15 6
— Oregon, Newtown Pippin, per case	9 6	10 6
— Australian and Tasmanian		
— Australian case	8 0	15 0
— Tasmanian	8 0	12 0
— Aus. Coxes cases	20 0	25 0
Bananas, bunch:		
— Doubles	8 6	11 0
— No. 1	7 0	8 0
— Extra	9 0	10 0
— Giant	12 0	14 0
— Loose, p. doz.	0 6	1 6
— Red coloured	4 6	5 6
— Jamaica, pr ton	£9	£12
— Jamaica Ordinary per box (9 doz.)	5 0	5 6
Dates, per dozen	2 9	3 0
— Egyptian, cwt.	25 0	—
Cranberries, p. case	9 0	—
Green Figs	6 0	18 0
Grape Fruit, case:		
— 96's	8 0	20 0
— 80's		
— 64's		
— 54's		
— per dozen	4 0	6 0
Grapes:		
— Almeria, barrel	22 6	25 0
— Almeria, per doz. lbs.	8 6	10 0
Grapes, *continued*—		
— English (New), per lb.	4 0	5 0
— Belgian, New Season, p. lb.	2 0	3 0
— Cape, per box	5 0	11 0
Lemons, Messina, per case	15 0	16 0
Palermo, box	10 0	—
Lychees, 1 lb. box	1 6	—
Mangoes, Cape, dz.	6 0	8 0
Melons, Cape	1 0	2 0
— English, each	4 0	8 0
Nuts, Almonds, bag	52 6	—
— Brazils, cwt.	54 0	62 0
— Spanish, sack	40 0	42 6
— Barcelona, bag	35 6	36 0
— Cocoanuts, 100	18 0	23 0
— English Cobs, per lb.	0 3	0 4
— Chestnuts, bg.	14 0	26 0
— Walnuts, French, p. cwt.		
— Naples, p. cwt.	64 0	—
Oranges:		
— Seville, sours, case	18 0	20 0
— Messina, bitters, case	8 0	—
— Jaffa, per case	8 6	9 0
— Murcia	10 0	11 6
— Denia, per case	14 6	34 6
— Palermo Blood	6 6	7 6
Peaches, Cape, box	10 0	15 0
Pears:		
— Cape, box	5 0	7 0
— Tasmanian, case	10 0	12 0
— per bundle of 3 boxes	10 0	12 0
Pineapples, St. Michael	2 6	4 0
— Cape, dozen	4 0	6 0
Plums, Cape, box	4 0	6 0
Rhubarb, doz. bndl.	0 8	10
— Natural, tally	8 0	10 0
Strawberries, p. lb.	2 0	6 0

Cut Flowers, &c.: Average Wholesale Prices.

	s.d.	s.d.
Arum (Richardias)	3 0	4 0
Azalea, per dozen bunches	4 0	—
Camellias, white, per dozen	2 0	—
Carnations, per dozen blooms, best American varieties	1 0	1 6
— smaller, per doz. bunches	12 0	15 0
— Carola (crimson), extra large	2 0	3 0
— Malmaison p. doz. blooms:		
— — pink	12 0	15 0
Daffodils, per doz. bunches:		
— Emperor	1 6	2 0
— Sir Watkin	1 6	2 0
— Victoria	1 6	2 0
Eucharis. per doz.	3 0	—
Freesia, white, per doz. bunches	1 6	2 0
Gardenias, per box of 15 and 18 blooms	2 0	3 0
Lilium auratum, per bunch	2 0	2 6
— longiflorum, per doz. long	3 0	—
— — short	2 6	—
— lancifolium alba, long	2 0	—
— — short	2 0	—
— — speciosum		
— rubrum, per doz., long	2 0	—
Lilium speciosum rubrum, short	1 0	1 3
Lily of the Valley, per dozen bunches:		
— extra special	18 0	21 0
— special	15 0	—
— ordinary	10 0	12 0
Orchids. Cattleya, per doz.	10 0	—
— Cypripedium	3 0	—
— Odontoglossum crispum	4 0	—
Pelargoniums, per dz. bunches White	4 0	6 0
Double Scarlet	6 0	—
Roses, 12 blooms:		
— Countess Derby	—	—
— Liberty	2 0	3 0
— Niphetos	1 6	2 0
— Richmond	2 0	3 0
— Rose Queen	3 0	4 0
— Sunburst	3 0	5 0
— Ward	2 0	3 0
— Mermets	2 0	3 0
Spiræa (Astilbe) japonica, per dz. bunches	8 0	—
Tulips, per dozen bunches:		
— — pink	12 0	15 0
— single red	12 0	—
— — white	10 0	12 0
— — yellow	10 0	—
— — bronze	9 0	10 0
— — pink	10 0	12 0
Violets, Princess of Wales, per dozen bunches	4 0	—
— Anemone fulgens	2 6	—

Plants in Pots, &c.: Average Wholesale Prices.

	s.d.	s.d.
Azalea, white and coloured, per dozen pots	30 0	36 0
Aralia Sieboldii, dozen	6 0	7 0
Araucaria excelsa, per dozen	18 0	21 0
Asparagus plumosus nanus, per dozen	10 0	12 0
— Sprengeri	8 0	9 0
Aspidistra, p. dz., green	21 0	30 0
— variegated	30 0	60 0
Boronea megastigma	15 0	18 0
heprophylla	15 0	18 0
Cinerarias, p. doz.	8 0	9 0
Cocos Weddeliana, per dozen, 60's	6 0	12 0
— larger, each	2 6	10 6
Croton, per dozen	18 0	30 0
Cyclamens, 48's	10 0	12 0
Cyperus alternifolius, p. doz.	5 0	6 0
— laxus, per doz.	4 0	5 0
Dracæna, green per dozen	10 0	12 0
Ferns, in thumbs, per 100	8 0	12 0
— in small and large 60's	12 0	20 0
in 48's, per doz.	6 0	—
Ferns:		
— choicer sorts, per doz.	8 0	12 0
Ferns: (*Continued.*)—		
— in 32's per doz.	10 0	18 0
Ficus elastica, per dozen	9 0	12 0
Genistas, per doz.	10 0	12 0
Geonoma gracilis, 60's per dozen	6 0	8 0
— larger, each	2 6	7 6
Hyacinths, white, in pots, p. doz.	8 0	9 0
Kentia Belmoreana, per dozen	5 0	42 0
— Fosteriana, 60's, per dozen	4 0	6 0
— — larger, per dozen	18 0	63 0
Latania borbonica, per dozen	12 0	30 0
Lilium lancifolium rubrum in pts., per dozen	13 0	21 0
Lilium lancifolium alba, in pots, dozen	18 0	21 0
Lilium longiflorum per dozen	18 0	30 0
Lily of the Valley	18 0	21 0
Marguerites, in 48's per doz., white	8 0	10 0
Pandanus Veitchii, per dozen	36 0	48 0
Pelargonium (Geranium), double scarlet, 48's	4 0	5 0
— other varieties	5 0	6 0
Phœnix rupicola, each	2 6	21 0
Spiræa japonica, per dozen pots	6 0	8 0
— pink	10 0	12 0

Vegetables: Average Wholesale Prices.

	s.d.	s.d.
Asparagus, Giant, per bundle	7 6	10 0
— English, per bundle	2 6	3 0
— Paris green	2 6	3 0
— Sprue, bundle	0 7	0 8
— Lauris	3 0	4 0
— Cavaillon	1 8	1 9
— Victoria	4 6	5 6
Artichokes (Globe), per dozen	2 0	2 6
— ground, ½ bus.	1 6	—
Batavia, per doz.	2 0	—
Beans:		
— Guernsey, lb.	0 8	0 10
— English, per lb.	0 8	0 10
— French, per lb.	0 8	0 10
— — broad, pad	6 0	6 6
Beetroot, p. bshel.	1 0	2 0
— bags	3 0	3 6
Broccoli, bushel	1 0	1 6
— bags	1 9	2 0
— Heads, p. hmpr.	3 0	6 0
Cabbages, p. tally	4 0	—
— per doz.	2 0	2 6
— Cornish pr. crate	5 6	6 6
Carrots (English) pr. doz. bun.	1 0	2 0
— French, dozen	7 0	8 0
— per pad	3 0	3 6
— unwashed, per bag	2 0	2 6
— washed, bag	3 0	—
Cauliflowers, per tally	10 0	15 0
— per dozen	3 0	4 0
Celeriac:		
— French, p. doz.	4 0	4 6
Celery, per dozen "fans"	12 0	18 0
Chicory, per lb.	0 1½	0 2
Cucumbers, per dozen	3 0	4 0
Endive, per dozen	2 0	—
— French, p. doz.	2 0	2 6
Greens, per bushel	1 0	1 6
— bags	2 0	—
Garlic ... strike	2 6	—
Horseradish, 12 bundles	10 0	12 0
Leeks, per doz.	1 0	1 6
Lettuce, Cos, per doz.	2 0	3 6
— English, round, per doz.	0 9	1 0
— French, p. crate	2 9	3 6
Lettuce:		
— round, p. crate	3 6	—
— Dutch, p. crate	2 6	3 0
Mint, per dozen bunches	3 0	6 0
Mushrooms, cultivated, per lb.	1 0	1 3
— Broilers	10	1
Mustard and Cress, per doz. punnets	0 10	1 0
Onions (English), per bag	3 9	4 0
— per bushel	1 6	2 0
— picklers, per ½ bushel	2 6	3 0
— (spring), per doz. bunches	3 0	—
— (Spanish), case	4 6	5 6
— Dutch, bags	3 6	—
— Egyptian, bags	6 6	—
— — cases	6 6	—
Peas, French, pad of 10 lb.	5 0	6 0
— Guernsey, p. lb.	1 0	1 6
Parsley, per doz. bunches	2 0	2 6
Parsnips, per bag	1 9	2 0
— pe bushel	1 6	—
Radishes (French), per dozen	1 6	1 9
— English, p. doz.	1 0	1 9
Sage, per dozen	2 0	—
Savoys, per tally	5 0	8 0
— per box	3 0	4 0
Seakale, punnets	10	1 0
— outdoor, box, 12 lbs.	2 0	3 0
Spinach, p. bushel	2 0	2 9
— French, crate	1 6	2 6
Scotch Kale, bushl.	1 0	1 3
Tomatos, English, per lb.	1 3	1 6
— Canary, p. bdl.	18 0	22 0
Thyme, per dozen bunches	1 6	2 0
Turnips (English), per dozen bunches	1 6	2 6
— bags	2 6	—
— washed, French, dozen	9 0	10 0
— unwashed, bag	2 0	2 6
Turniptops, bushel	1 3	1 6
— per bag	2 0	—
Watercress:		
— dozen	0 4	0 6

REMARKS.—Consignments of Tasmanian and Australian Apples and Pears this week, per s.s. Otway, amounted to about 7,000 casks, the majority being Apples. Wenatchee, Nova Scotian and Californian Newtown Pippin Apples are still obtainable. Fruit received from Cape Colony this week amounted to 24,000 boxes, consisting of Black and White Grapes, Pears (including Winter Nelis), and Kelsey Plums. A few bunches of Gros Colman Grapes are obtainable. Bunches of this season's crop of English and Channel Island Black Hamburgh Grapes are arriving daily. Green Figs from the same sources are of very fine quality considering the time of the year. Melons from Guernsey and English growers are obtainable. Supplies of Strawberries have been equal to the demand. The first consignment of Belgian Peaches is due to reach the market this week. Mushrooms continue a good trade. Seakale, both forced and natural grown, is plentiful. There have been fewer Tomatos from English, Teneriffe and Guernsey growers during the past week. Forced vegetables from the Channel Islands are an increasing quantity daily. Good Broccoli are seen from Kent, Cornwall and Roscoff, the latter being particularly fine. Other green vegetables are very abundant. —*E. H. Rides, Covent Garden, April 16, 1913.*

Potatos.

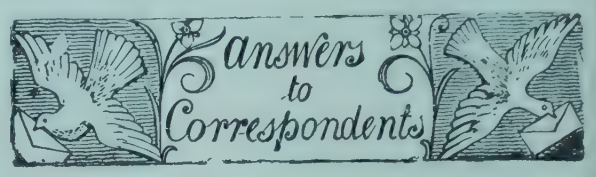
	s.d.	s.d.		s.d.	s.d.
Blackland, per cwt.	3 9	4 0	Belgian, per bag	3 9	4 9
Evergood ,,	4 0	4 6	German ,,	4 0	5 0
King Edward ,,	4 6	5 0	Dunbar ,,	6 0	6 9
Dutch, per bag	3 0	4 0	Scotch (grey soil) ,,	4 6	5 3

REMARKS.—Prices are a little firmer and trade is good for tubers of best quality. Consignments last week were not quite so plentiful except from abroad. The cold weather is in favour of the old Potato trade for it has checked the growth of new potatos in Jersey and St. Malo. —*Edward J. Newborn, Covent Garden and St. Pancras, April 15, 1913.*

Obituary.

LUDWIG SPAETH.—The death is recorded in *La Tribune Horticole* of this celebrated German fruit-grower. Herr Ludwig Spaeth had been President both of the German Pomological Society and of the Horticultural Society of Germany, and his death will leave a gap in the front rank of horticulturists. He was not only a first-rate grower, but was active in all movements connected with his profession. He died at an advanced age, and leaves a large circle of friends.

A. HOWELL.—We regret to record the death, on the 9th inst., of Mr. A. Howell, park gardener in the service of the Corporation of Brighton for twenty-five years. Mr. Howell was an active member of the Brighton, Hove, and Sussex Horticultural Society; he leaves a widow and several sons and daughters.



CYCLAMEN: *Foreman.* Cyclamen latifolium, the Florist's Cyclamen, is often known in gardens as C. persicum. It is a native of Greece, Palestine and other parts of Syria.

DARWIN TULIPS UNHEALTHY: *Constant Reader.* Both plants have been injured by aphis. If the pest is still present on the leaves, syringe the plants with tobacco water or extract of quassia

FIGS DISEASED: *W. W.* and *B. G.* The Figs are attacked by Cercospora Bolleana. Burn all diseased leaves and fruits, and spray the trees with diluted Bordeaux mixture, which will help to check the disease. In very bad cases it is best to root up and burn the trees, afterwards planting new stock in fresh soil.

NAMES OF PLANTS: *A Reader.* Juniperus virginiana var. Schottii.—*W. M. B.* Ilex latifolia.—*E. H. S.* 1, Picea orientalis; 2, Cupressus pisifera; 3, C. Lawsoniana; 4, Thuya plicata (gigantea); 5, Cupressus pisifera plumosa aurea; 6, Thuya occidentalis; 7, Cupressus Lawsoniana var.; 8, Juniperus communis; 9, Rubus spectabilis. *T. A. H.* Dicentra (Dielytra) eximia. *R. H. N.* The varieties of Codiæum (Croton) are as follow:—1, Disraeli; 2, Johannis; 3, Queen Victoria; 4, macrophyllum; 5, variegatum; 6, trilobum; 7, longifolium; 8, spirale.—*G. F.* Arachis hypogæa (Monkey Nut).—*O. H.* 1, Masdevallia Troglodytes; 2. Pleurothallis elachopus; 3, Ada aurantica; 4, Oncidium pubes; 5, Lycaste aromatica.—*S. C.* 1, Veronica Traversii; 2, Cistus ladanifera (Gum Cistus); 3, Asarum canadense.—*T. S.* Skimmea japonica (fragrans).—*Foreman.* 1, Pteris tremula; 2, Pteris longifolia; 3, Aspidium falcatum; 4, Asplenium lucidum.

NIGHT SOIL: *L. L.* As the material has been stored for a considerable period, kept dry and mixed with soot and burnt refuse, it should be very suitable for the purpose you mention. It may be used at the rate of one barrow-load to every twelve barrowfuls of soil. The manurial properties of night soil are not so valuable as your friend, "the old seedsman," stated.

PEACH SHOOTS DISEASE: *F. D.* The Peach shoots are affected with Silver-leaf disease. (See reply to *J. F H.* and *Constant Reader* on p. 244 of last week's issue).

TOMATO PLANTS DISEASED: *C. B.* The injury is caused by Cladosporium fulvum. Spray, for preference with the Bordeaux mixture, if not with liver of sulphur, at a strength of 1 oz. in 3 gallons of water.

VINE SHOOTS: *J. H.* No disease is present. The young growth has been checked by a chill. Place a screen of muslin over the inside of the ventilator.

Communications Received.—B. G.—H. F.—W. W., Newcastle—E. C. P.—W H.—W. M.—H. B.—A. T.—H. R.—Rook—W. B.—C. F. A. V. de S.—J. B. F—M. B.—C. W.—W. W.—A. H.—H. C. L.—A. W.—H. F. M.—A. C. B.—M. S.—A. E.—B. D.—E. M.—L. F. P.—H. S. T.—G. M. T.—T. F. M., Delaware—C. R. S.—J. H. J.

THE
Gardeners' Chronicle
No. 1,374—SATURDAY, April 26, 1913.

CONTENTS.

Agricultural education, the organisation of ... 265
Agricultural research ... 271
Alpine plants in a Swiss mountain garden ... 272
American Gooseberry mildew 272
Books, notices of—
The Art and Craft of Garden Making ... 266
Books, rare 271
Cedars at Wilton House, Salisbury, the ... 271
Changed soil, effects of 273
Chrysanthemums, sulphur for 272
Damages against a horticultural society ... 272
Glasshouses, rating ... 273
Insects and pests, destructive—
The Gipsy Moth ... 263
Irises, early 273
Juvenile characters ... 272
Lathyris sativus as food for horses 273
Lockhurst, Mr. H. G., presentation to ... 271
Long-stemmed Jersey Kale 273
McLeod, Mr. J. F., legacy to 272
Marguerite Mrs. F. Sander ... 273
Nests, remarkable find of... 270
Park, a national, in Grenoble 271
Plants, new or noteworthy—
Rhododendron pallidum 264
Primula pseudo-denticulata 264
Primula Conference, the ... 270 & 275
Primula Conference impressions 273
Primula "Jean Douglas" 267
Raspberry-Strawberry 271
Rosary, the—
Cultural hints ... 267
Saxifraga Faldonside ... 273
Societies—
Kent, Surrey and Sussex Daffodil ... 277
Midland Daffodil ... 277
National Rose ... 270
Norwich Horticultural 277
Royal Horticultural ScientificCommittee 274
Royal Meteorological 277
Société Française d'horticulture de Londres 276
United Horticultural Benefit and Provident 277
Spraying trial 274
Sweet Pea testimonial 272
Trees and shrubs—
Grafting Rhododendrons in Holland ... 264
Ligustrum japonicum coriaceum 265
Vienna, gardening conferences in 271
Week's work, the—
Flower garden, the ... 268
Fruits under glass ... 269
Hardy fruit garden, the 268
Kitchen garden, the... 268
Orchid houses, the ... 269
Plants under glass ... 269

ILLUSTRATIONS.

Gipsy Moth, the (Coloured Supplementary Illustration).
Helichrysum bellidioides 266
Ligustrum japonicum coriaceum 265
Primula "Jean Douglas" 267
Primula Maximowiczii 267
Primula pseudo-denticulata 264
Primula Listeri 271

DESTRUCTIVE INSECTS AND PESTS
SCHEDULED BY THE BOARD OF AGRICULTURE AND FISHERIES.

VIII.*—THE GIPSY MOTH.

THIS handsome moth (see coloured supplement) must be regarded as one of the most dreaded of forest pests, though in Europe its ravages are only intermittent, and it is rarely found in Great Britain. The Gipsy Moth was introduced into the United States of America in 1869, in the form of egg clusters for the purpose of study. During a gale the net enclosing the shrub on which the caterpillars were feeding was blown off and some of the caterpillars escaped. Since that time the pest has increased to an almost incredible extent in America, and in some States the damage done since 1889 has been exceedingly heavy. In some European countries it is at intervals very harmful, as in East Prussia, Silesia and Brandenburg in the years 1898 and 1899.

* Previous articles appeared in the issues for September 28, October 12, Nov. 2, and Dec. 7, 1912, and on February 1, March 1 and March 15, 1913

The Gipsy Moth (Liparis dispar, Porthetria dispar, or Ocneria dispar) deposits its eggs low down on the trunks of trees, the under sides of branches, in crevices and holes, on walls, etc., in masses of about 400 to 500. The eggs are laid during July and August, and each egg is about the size of a pin's head. The egg masses, which are covered with hairs from the body of the moth, are oval in form and of the size of a plum. The eggs pass the winter on the tree trunks, etc., and hatch in the following spring about the time when deciduous trees come into leaf. At the outset the young caterpillars are minute and dark-brown, but after several moults they ultimately attain to 2 to 3in. in length and become dark-brown or sooty in appearance, with two rows each of red and blue spots along the back and one dim yellowish stripe between them (Howard).† In the early stages they commonly hang suspended by silken threads. The spots or warts on the grown caterpillars are covered with long hairs.

The larvæ pupate towards the end of June or in July. The chocolate or dark reddish-brown to blackish-brown pupæ are enclosed in a partial cocoon and bear numerous small tufts of yellow hairs. The pupæ are found in crevices of the bark, holes, the under side of branches, rubbish heaps, walls, etc., wherever shelter may be found.

In July and August the moths appear. The male (see supplementary illustration) is brownish-yellow to grey-brown, with dark wavy lines on the forewings, and a broad dark margin to both fore and hind wings. It has a slender body and feathered antennæ, and flies well both by day and night. The female moths are dingy white, with black dots along the border of both front and hind wings, and with three or four dark zig-zag lines across the wings; the abdomen ends in a tuft of dark soft hairs. Although the wings are well developed the body of the female is so heavy as to prevent flight. The antennæ of the male are feathered, those of the female are threadlike and smooth. The females die a few hours after egg-laying.

The caterpillars of the Gipsy Moth feed upon the leaves of most orchard trees, ornamental and shade trees and shrubs, and on deciduous and coniferous forest trees, and they may occur in such hordes as to leave the trees bare. The food plants preferred are Apple, Willow, Elm, and Oak, but Howard says that in Massachusetts "it will on occasion devour every useful grass, plant, flower, shrub, vine, bush, garden or field crop, that grows in the State." In this State thousands of fruit and shade trees have been killed and "in the woodlands one can easily find blocks of from 1 to 50 acres in which almost every tree is dead." Whereas several defoliations may be necessary to kill deciduous trees only one stripping will cause death to coniferous trees, and it is this fact, says Howard, "which makes the Gipsy Moth so much more serious a pest than the brown-tail moth." In Massachusetts the moth first became a pest about 1889, when trees were defoliated and the caterpillars crawled into the houses and upon the fences and walks, so as to become a public nuisance. In 1896 a volume of some 500 pages dealing solely with the Gipsy Moth in Massachusetts was issued by the State Board of Agriculture. Many quotations are made from the descriptive accounts written by persons who were troubled by the presence of the hordes of caterpillars, and one of these may be given here as affording some idea of the plague apart from the damage caused to trees:—

"The caterpillars used to cover the basement and clap-boards of the house as high as the window-sill. They lay in a solid black mass. I would scrape them off into an old dish-pan holding about 10 quarts. When it was two-thirds full I poured kerosene over the mass of worms and set them on fire. I used to do this a number of times a day. It was sickening work. I have used in burning caterpillars 5 gallons of kerosene in three days. I have seen my fence black with the small caterpillars when they first hatched out in the spring. I used to kill them on the fence by pouring scalding water on them. The caterpillars used to be very thick in the grass, and there would be one under every leaf. On certain occasions callers would have to wait at the front door until I could sweep the caterpillars off the steps so that they could come in without getting the worms on their clothing."

In the United States a thoroughly organised war has been waged for some years against the moth, and scouting parties have crossed from badly infested States into States in which only isolated colonies of the pest existed, with the object of stamping out the colonies, infested districts being mapped. The States themselves are actively engaged in fighting the moth, and spend large sums of money in the effort to control it and the Brown-tail Moth (*Gardeners' Chronicle*, March 1), Massachusetts alone voting about £66,000 for the three years 1905-7, while Congress voted £16,500 in 1905.

The means employed to combat the Gipsy Moth include the destruction of the egg masses, particularly by saturating with crude coal-tar creosote; spraying with poisons (Paris green and arsenate of lead) to destroy the caterpillars; placing round the trees burlap or cheap cloth strips under which the caterpillars can shelter and subsequently be destroyed; and sticky-banding to prevent the caterpillars ascending the trees. According to Rogers and Burgess (1910) sticky banding was not successful until the introduction of "Tanglefoot," about eight or nine years ago. Pruning and clearing away loose bark and natural shelter places where the female moths may deposit egg clusters is also practised

† It is remarked by Rogers and Burgess that "on the dorsum of each of the first five segments behind the head is a pair of prominent blue tubercles, while on the following six segments the tubercles are of a dark-red colour. The arrangement and coloration of these tubercles is characteristic of the species." This indicates a difference in description, and in Flugblatt No. 6 of the *Kais. Biol. Anstalt für Land- und Forstwirtschaft* it is stated that the full-grown caterpillar is "about 4-7 cm. (1¾ to 2¾ ins.) long, with a large blackish head, and greyish-yellow body with dark spots and six longitudinal bands of large bushy hairy warts. A large red wart occurs about the middle of the body

As the egg-clusters remain on trees, etc., for about nine months in the year, the pest has been commonly distributed by egg-infested stock, lumber and its products, boxes and railway carriages. The minute caterpillars are also blown by the wind, and if they lodge on food plants suitable to their tender age a new colony is formed. Particular care is therefore necessary to prevent distribution by these means, especially the former. Dispersal by flight is very much restricted, since, as stated above, the females are so heavy as to be incapable of flight. The latest work dealing with this matter is Bull. No. 179 (1913) of the U.S. Dept. Agric., Bur. Entom., by A. F. Burgess, "The Dispersion of the Gipsy Moth"—a bulletin of 62 pages. *H. C. Long.*

NEW OR NOTEWORTHY PLANTS.

RHODODENDRON PALLIDUM.

THE name proposed by *W. W.*, Rhododendron pallidum (see p. 230), for the Kew plant of R. virgatum var. album, which came from the Edinburgh Botanic Gardens some years ago, and which is presumed to be of hybrid origin, is untenable, as it is antedated by Azalea pallida of Turczaninow (Rhododendron pallidum, mihi, comb. nov.). The plant, therefore, needs rechristening, and the name R. edinense does not appear to me to be inappropriate in view of its associations with the Scottish botanical establishment. As to Azalea pallida, that has been a much misunderstood species. The name first occurs as a "nomen nudum" in the Bull. Soc. Nat. Moscow (1838), 96, upon which De Candolle subsequently founded his Osmothamnus pallidus (D.C. Prod. VII., ii., 715 (1839), where he opines that it probably represents a variety of O. fragrans = Rhododendron fragrans, Maxim, though Turczaninow vows that it is perfectly distinct in the living state.

The name Osmothamnus pallidus was eventually adopted by the latter Russian author (*op. cit.* (1848), 498), where he quotes Azalea Lapponica, Pallas Fl. Rossica, II., 52, t. 70, f. 1 A and B (1788) (not to be confounded with A. Lapponica of Linnæus) and Gmelin, Fl. Sibirica, IV., 125, t. 55 (1769), excluding the synonym of Tournefort, as a synonym of his plant. A comparison, however, of Gmelin's and Pallas' figures precludes their identity, for the flowers figured in Gmelin's work are subsessile, and, moreover, are recorded to be white in colour, while in Pallas' they are depicted on slender stalks, and are in colour not unlike those of the typical Azalea indica. The confusion is further accentuated by the fact that A. pallida has been regarded as conspecific with Rhododendron Anthopogon, Don (Mem. Wernerian Soc. III. (1820), 409), but if we accept Pallas' figure as typical of A. pallidum, then this view is entirely refuted. Moreover, Don's description is based on Wallich's material collected at Gossainthan in Nepaul, while A. pallidum is essentially a North-East Asiatic plant, having been found on rocky Alpine situations at Buchat, Nuchu-Daban, etc., in Dahuria, by Turczaninow, who states that the whole plants emit a disagreeable odour. *R. A. Dümmer.*

PRIMULA PSEUDO-DENTICULATA (PAX.).

THE plant illustrated in Fig. 113 much resembles the well-known Himalayan P. denticulata, and is evidently the Chinese form of that species. It was first discovered by Mr. A. Henry in Mengtze, Yunnan, growing by the side of a streamlet. In 1904 specimens were found growing in boggy ground at the head of the Chien-Chuan Valley at 8,000 feet elevation by Mr. G. Forrest when plant collecting for Messrs. Bees, Ltd., in Yunnan. Mr. Forrest also met with it in other localities, including the Tsu-hsiong-fu Valley at 7,000 feet elevation. The plant was considered at first to be a form of P. farinosa, and has been distributed under the name of P. farinosa var. Beesii. But its affinity is decidedly nearer to P. denticulata than to the "Bird's Eye" Primrose. P. pseudo-denticulata grows from 6 inches to 12 inches high, producing stiff leaves each 4 inches long. The upper half of the scape is covered with a farina or powder, and terminated by a compact head of rosy-lilac fragrant flowers, which have an orange-coloured eye. The chief differences between the Himalayan and Chinese plants are that the former have much larger leaves and larger flower heads. The Chinese plant is somewhat intermediate between P. denticulata and P. farinosa, but more closely resembles the former species. It is evidently a biennial like P. denticulata. *W. I.*



Photograph by W. Irving

FIG. 113.—PRIMULA PSEUDO-DENTICULATA. FLOWERS ROSY-LILAC.

TREES AND SHRUBS.

GRAFTING RHODODENDRONS IN HOLLAND.

THE method of propagating the hardier hybrids obtained by crossing Rhododendron caucasicum or R. catawbiense with R. ponticum is described by Mr. Hans Memmler in an interesting article published in *Die Gartenwelt* (March 1, 1913).

The hybrids are grafted on stocks of R. ponticum, plants of which are raised from seed for the purpose. Seed is sown, not too thickly, in cold frames about the end of May. In the following April or May the seedlings are pricked out in cold frames, and when two years old they are planted out in the open.

Stocks are chosen from plants which are from three to four years old. The plants which are to serve as stocks are potted in peaty soil in 3in. pots.

Grafting is practised at different times of the year, from October or even earlier until February or March, though the best results are obtained in the latter months. The potted plants are put first into cold frames, and then brought under glass in order to encourage free growth, and as soon as the pots are full of roots the work of grafting may be done. For use in the early part of the year plants must be potted at latest in October, otherwise a root growth sufficient to nourish the scion and to provide for the healing of the wound does not take place.

The treatment afforded to the grafted plants varies according to the time of year when the operation is performed. If grafted in August the plants are stood in cold frames till May, when they are put out in the open. By this time the scion has begun to grow, and the foliage of the stock may be removed down to the point of junction. In winter the plants in the cold frames must be protected by oiled paper and mats.

Plants grafted at the end of October may be treated in a similar way if the weather be favourable, but it is necessary to leave them for from two to four weeks in the propagating house till the wounds have healed. They may then be put into the cold frame.

If worked at any time from the end of December till March the plants must be kept in a heated frame until near the time for planting out, when they should be hardened off in a cold frame.

In every case the stock should be cut back to the junction as soon as the wound is healed and the scion has begun to grow, and at the same time the ties used in grafting should be removed. For the early grafted plants a winter temperature of about 40° suffices, but the plants grafted so late as from Christmas to March require to be kept for a time at a higher temperature—Mr. Memmler recommends a temperature of about 68°—till the union is established. During this time the air of the house should be kept moderately humid—that is to say, neither too moist nor too dry.

Established plants in the open are covered during the first winter, and the more delicate hybrids must be brought under cover. The grafted Rhododendron hybrids are ready for sale in their third year.

LIGUSTRUM JAPONICUM CORIACEUM.

The photograph reproduced in Fig. 114 was sent by Mr. Edwin Beckett, of Aldenham House Gardens, Elstree, with the following particulars :—"Ligustrum japonicum coriaceum is probably the most interesting of all the Privets, and will be appreciated by all lovers of evergreen shrubs.

"It is not a fast-growing plant, and so far as I am aware never attains to very large dimensions. The plant is eminently suitable for growing on rockeries as it forms a small shrub. The leaves are of a bright, shining, dark-green colour, and the shoots form a compact, round head, as may be seen from the photograph. This new Privet is well worthy a position amongst other ornamental shrubs, and should be planted in the foreground."



Fig. 114—LIGUSTRUM JAPONICUM CORIACEUM IN THE HON. VICARY GIBBS'S COLLECTION.

THE ORGANISATION OF AGRICULTURAL EDUCATION.

The attempt to organise agricultural education—rendered possible by the grants available from the Development Fund—has made a definite advance. The Board of Agriculture has issued two important memoranda defining the lines on which the organisation is to proceed.

In order to make clear the scheme advised by the Board it must be premised that the whole country is divided into a series of districts or "areas," and that each of these districts may include a group of counties. In the centre of each district or agricultural province is, or will be, an institution of collegiate rank—an agricultural college. Each college is to serve its area by carrying out investigations and by providing higher instruction in agriculture

If no college exist within a given province, a farm institute is to be created; if a college exist it may give asylum to the farm institute or—if we understand the memorandum aright—a farm institute may be established in the centre for higher agricultural education—apart from an existing agricultural college. The interests of the province are to be presided over by an advisory council consisting of representatives of local education authorities, of the agricultural colleges, and of representatives nominated by the Board of Agriculture. The functions of the advisory council will include the consideration of schemes of education proposed by the several constituent counties for their own use, the co ordination of the provision of technical advice for farmers, and assistance in the preparation of schemes of agricultural experiments and demonstrations. In short, each advisory council will be a provincial parliament of the new Heptarchy into which the country is to be divided for purposes of agricultural education. The county-units of the province are to form agricultural education committees, which shall direct the work in the county. The committee may be a sub-committee of the county agricultural committee, or a special committee of the County Council or of a group of County Councils. It is to include local agriculturists, and is to have representatives on the advisory council. The chief officer of each such committee is to be an organiser of agricultural education. The organiser is to act as principal of the farm institute, and in order to keep in touch with the college of the province he will be attached to the staff of the latter institution

The county units may establish farm schools in which instruction more elementary than that provided by farm institutes will be given. This instruction is to take the form of short winter and

summer courses. Considerable grants are forthcoming—amounting in some cases to so much as 75 per cent. of the annual expenditure, but the grants will be available only for work which is new and additional. A county which has been expending large sums in agricultural education is only to be rewarded indirectly and partially. We shall be surprised if this curiosity of administrative justice does not meet with considerable opposition.

The scheme as it appears on paper has much to recommend it. It is at all events an attempt to create order out of chaos. What it may bring forth remains for the future to discover. It is an interesting attempt to determine whether we as a people are able to organise our agricultural education, or whether we are incapable of doing it.

One danger is inherent in the scheme, or, rather, in the execution of it, at the moment. It will require, if it is to be successful, a considerable number of adequately trained men to act as organisers. We do not know by what conjuring process these men are to be produced. It is evident that these posts will be open only to those who have had some sort of academic education in agriculture and in horticulture. It will be disastrous if they have not, in addition, a real and thorough knowledge of practical agriculture and horticulture. By this we mean a knowledge that would enable a man to manage a farm or garden himself, and not merely tell others how it ought to be done. Unless the men are forthcoming, the money will be wasted. We hope, therefore, that the scheme will be put into practice cautiously and slowly.

NOTICES OF BOOKS.

The Art and Craft of Garden Making.*

The fact that this book has reached a fourth edition is in itself a proof of its merits, and it shows also that there is an increasing demand by the gardening public for a work of this character. Since the book was first issued, some twelve years ago, subsequent editions have been enlarged, and the present one is nearly twice the size of the original issue.

As brought up to date, it is a thoroughly comprehensive treatise on the art of garden-making, for the twenty chapters deal with every branch of the art more or less exhaustively.

There are no fewer than 435 illustrations, plans and diagrams accompanying the 400 pages of letterpress, so that even a novice may understand the details given.

In the introductory chapters on the "Precedent of Garden Design" and the "Practice of Garden Design," the author discourses in the usual way upon the history of landscape gardening from the earliest times. He explains how landscape gardening has been influenced by fashion; how the "formal style" that prevailed among early designers of gardens gave place to the so-called "natural style," mainly through the influence of "Capability" Brown and Repton and their followers, though, in fact, the change was due chiefly to the absurd extremes to which the artificiality of the formal style was carried.

The "imitation of nature" prevailed more or less until quite recent times, and now again the tendency is decidedly in favour of formality, particularly since the architect has encroached upon the work of the landscape gardener.

Diversity of opinion as to the relative merits of the opposing styles still exists, and probably always will exist, among planners and planters of gardens, and this fact is an advantage, as it prevents the greater evil of our gardens being designed all on one model.

Styles in gardening are ever changing, but rather than to adhere slavishly to any particular mode, the aim of the landscape gardener should be to exemplify in gardens as great a variety of treatment as possible, so as to give the fullest values to lawn, tree, shrub and flower.

It matters little in decorative gardening whether flowers are displayed in squares, circles or other symmetrically-shaped beds, or in beds of no set shape at all, provided that the right kind of plant is placed in them to give the finest effects of floral beauty.

After the introductory chapters, the author proceeds to the practical part of the subject, and in the succeeding chapter on "The choice of a site and its treatment," he deals with the subject in a way that the majority are agreed upon. He emphasises the importance of a thorough consideration of a site, both from the house point of view and the garden. Too often a mistake is made in this matter at the outset when the architect of the house is alone consulted. He is apt to choose a site solely from the point of view of his house, and in many cases quite ignores the important considerations of its surroundings, with regard to exposure, soil and drainage. Often, too, the easy access to a new estate from public roads is overlooked, and indeed to provide such access is not always possible without serious and expensive engineering work.

There seems to be such a prevailing, though pardonable, ignorance among architects as to tree and shrub growth, that it is a common experience to see architects' pictures of the house they intend to erect on a bare hillside surrounded by trees of a century's growth, and such objects as high Yew hedges showing the matured growth of two or three generations, which is misleading to trustful clients who have no idea of the slow rate of tree growth.

The author is not too emphatic in his opinion that the landscape gardener should be the collaborator of the architect in the selection of sites for residences. In recent times it has become the custom of the architect to encroach upon the legitimate work of the garden designer, the result being that new gardens, when the architect leaves them, are like elaborate picture frames without pictures, and the landscape gardener is then called upon to fill in the picture under great difficulties, which might have been avoided had he been consulted at the outset.

In the chapters devoted to terrace gardening, with its accompanying architectural embellishment, one sees the decided trend of the author towards this method of treatment in the surroundings of houses. This treatment carried to excess, as it so often is, is entirely foreign to our ideals of beautiful English gardening, as it tends to destroy that repose so essential in the garden landscape, particularly when the treatment is carried out in the immediate foreground of the principal front of a large house, when suitable spaces for such gardening are available on other sides. The tendency of the present day is to crowd the foregrounds with intricate-patterned enclosures, which altogether destroy the idea of restfulness, particularly in cases where the views beyond are the chief reason for placing a house to face the views. Level terrace gardens may be desirable, and, in fact, quite necessary, in some situations, such as occur when a house is built on a hillside, but to make a laborious and expensive effort to construct such formal gardens in cases where natural contour does not necessitate the treatment is, in the opinion of many, not desirable. Many a beautiful old garden, which had formerly a house foreground of lawn and shade trees following the natural contour of the surface, has been spoiled by these modern extravagances of the architectural gardener in his efforts to square up everything and introduce his meretricious ornamentation.



Fig. 115.—HELICHRYSUM BELLIDIOIDES. FLOWERS WHITE WITH GREENISH-YELLOW DISC. R.H.S. Award of Merit on April 15, 1913. (See page 256.)

* *The Art and Craft of Garden Making.* By Thomas H. Mawson. Fourth edition. Price £2 10s. (Batsford.)

This excess of formalism is as much to be deprecated as the opposite extreme of meaningless eccentricities in the so-called natural or irregular style, the characteristic features of



Fig. 116.—PRIMULA MAXIMOWICZII. FLOWERS PURPLE.

R.H.S. Award of Merit on April 15, 1913. (See page 256.)

which are the abhorrence of straight lines anywhere, and the superfluity of aimless serpentine paths spread everywhere about the place, as if the garden had been made for the display of footpaths, as one sees in modern French gardens. The bad examples of both formal and irregular styles are to be seen in many English gardens, especially in those of small or moderate size.

In the chapters devoted to less controversial subjects, such as the prosaic matters concerning the kitchen garden, orchard and glass-houses, the author shows the same thorough practical knowledge of his subject as in the previous editions, and the advice given will serve as a reliable guide.

The formal arrangement of trees, which includes topiary work, has a chapter to itself, and the accompanying illustrations show the ludicrous puerilities that were prevalent in gardens in bygone days, but which happily find but little favour in modern times.

In direct contrast to this is the chapter on "Planting of trees for landscape effect" in garden and park, which is, perhaps, the most difficult of all subjects with which the landscape gardener has to deal, as to carry it out effectively and satisfactorily he must possess a wide knowledge of the material with which he works.

The illustrations are of varying merit. Many are beautiful reproductions of matured garden scenes, and particularly attractive are some of the coloured plates reproduced from pictures by Mr. E. A. Rowe and Mr. E. A. Chadwick.

The garden scenes of the Villa Carlotta and [illegible] are charming, but in contrast are others, such as the garish composition shown in figure 376. It is unfortunate that the author selected the remarkable garden scene shown as a frontispiece, which somewhat contradicts the principles advocated by him. Such a scene might be appropriate in a cemetery, but not in a private garden. The various illustrations reproduced from photographs taken of different garden scenes include those exemplifying the formal style, and others are eloquent protests against the artificiality of architectural gardening, such, for example, as that representing the lake at Kew.

The training of the young landscape gardener, or landscape architect, as he is now called, is the subject of extended remarks in the introductory chapters. These are sensible and to the point, and with them most of us will agree. The necessary training embraces such a wide range of subjects that many aspirants to the craft will be repelled. The author's remarks should be read by the ever-increasing numbers of self-styled landscape gardeners who profess the art, but whose only qualification is that they are able to cultivate shrubs and flowers.

So far as garden design can be taught from book knowledge, the work before us will be of value, and will be helpful to those who make the attempt of laying out and planting their own gardens.

PRIMULA "JEAN DOUGLAS."

This beautiful variety (see fig. 117) was raised by Mr. James Douglas, Great Bookham, Surrey, from P. viscosa and an Auricula. The plant has a great resemblance to one raised by Miss Willmott some years ago and distributed under the name of Mr. Berkeley; when the R.H.S. award of merit was granted some considered the new plant to be identical with that variety, but the raiser states that it is distinct. The beautiful purplish-rose flowers are produced in big trusses. The largest inflorescence of the [illegible] illustrated carried more than 20 blossoms



Photograph by R. A. Malby.

Fig. 117.—PRIMULA "JEAN DOUGLAS" (P. VISCOSA × P. AURICULA). FLOWERS PURPLISH-ROSE.

R.H.S. Award of Merit on April 1, 1913.

THE ROSARY.

CULTURAL HINTS.

Hybrid perpetuals that were pruned early in March require thinning, and it is better to rub out the young growths rather freely before they become too strong. As a rule far too many shoots are retained on the plants, with the result that their centres become crowded with weak growths that provide a happy hunting-ground for insect pests.

The Roses of a spreading habit of growth need supporting with small sticks to keep the growths more or less upright. Close-growing varieties are also benefited by training the shoots apart by the same means. It should be remembered that many Roses grow better if opportunity is afforded the basal buds to start readily, and those who grow Roses for commercial purposes under glass are fully aware of the importance of this detail. The growths of Roses that were budded last summer should be supported by stakes to prevent winds breaking out the buds ere they become established. These maiden plants should be afforded a handful of bone flour each, scattering the manure on the soil and afterwards hoeing the ground. Established Roses that have not had much manure up to the present may be given a dressing of the following compost:—One hundredweight each of kainit, bone meal and blood manure, with about 7 or 8 bushels of fine, dry potting soil. The mixture should be kept in a dry, airy shed for about three days before it is applied, and the dressing should be repeated in May and June, allowing a month to elapse between each application. The soil in which all Roses are growing should be well tilled, so that hoeing may be done frequently, for the plants will not thrive if the surface of the ground is hard. Mainly for this reason I condemn the practice of plant-

[illegible] ing Violas and other subjects among Roses, as their presence does [illegible] of the surface soil). [illegible] to plant against [illegible]

of the beautiful half-hardy varieties, such as Macartney, alba simplex, Marie Leonida, and Berberifolia Hardii. It is not too late to plant Polyantha varieties for summer bedding; beds that have contained bulbous plants are very suitable for planting with these Roses, which have a great value to the gardener. Some of the newer varieties, such as Erna Teschendorff, Rödhätte, Yvonne Rabier, Merveille des Rouges and Ellen Poulsen, make grand bedders. If pruned hard each year and transplanted every third year the plants will furnish a beautiful display of blooms practically all the summer and autumn, and they relieve the gardener of the trouble of growing a large stock of ordinary bedding plants. Roses that were layered last June may be transplanted to their permanent quarters, lifting them if possible with a ball of earth. Climbing Tea Roses propagated from layers make fine plants in a short time, and they undoubtedly thrive best on their own roots. Gaps may be filled with specimens in pots, but instead of pruning these plants hard I advise pegging down the growths partly, to cause them to grow from the base. Many new Roses are procurable only as pot plants; those with hard growth in 5-inch pots will, if planted in well-cultivated soil, develop quickly into fine specimens.

Insect pests will soon be troublesome; indeed, wall plants are already attacked by maggots, and a daily examination of the bushes is recommended. One good result of hard pruning is that large numbers of insect pests are destroyed, whereas old, neglected Roses are usually infested with maggots and aphis. Where mildew was troublesome last year dust the ground freely with green sulphur. Some of the sulphur should be placed in a muslin bag and shaken over the plants on fine evenings at frequent intervals. Those who are troubled with black spot disease, which makes Roses appear so unsightly in autumn by causing premature defoliation, should read the article on the subject by Dr. Waddell in the National Rose Society's Annual for 1913.

Roses under glass that have furnished their first crop of bloom should receive a top-dressing composed of half loam and half Clay's Fertiliser. Each plant in 8 or 9 inch pots should receive a handful of this compost after the removal of a similar quantity of the old soil. Where space permits, a plant each of the White and Yellow Banksian Roses should be planted out under glass upon a south wall or against pillars of lofty conservatories. They are now flowering delightfully, and the white variety fills the house with its violet-like perfume. There are spurious white varieties on the market; the thornless one is the best. Do not cut off the small spray-like growths, but spread them out as much as possible. After flowering, some of the old wood may be cut clean away. Avoid high cultivation in the case of these varieties. Fortune's Yellow is another beautiful Rose, and may be raised from cuttings inserted now in a propagating frame. The cuttings are best made from wood that has flowered recently. Rambler Roses in pots will need constant attention. The soil at the roots dries very quickly and the plants should be examined three or four times a day to see if they require moisture. When the first bud shows colour it is a good plan to remove the plants to a cool house unless blooms are required early, as the blossoms are much finer when allowed to develop slowly. All should grow the fragrant perpetual-flowering variety Sylvia, which flowers very freely. Climbing Mrs. Cutbush is another excellent sort, whilst Shower of Gold makes a delightful plant twined around sticks in balloon fashion. Climbing Roses under glass provide large quantities of cut blooms, and one of the best varieties is climbing Mrs. W. J. Grant. If planted in a well-trenched border this Rose will make strong rods annually which, if trained carefully, will blossom from almost every eye. *Experience*

The Week's Work.

THE HARDY FRUIT GARDEN.

By B. Goodacre, Gardener to Sir Ernest Cassel, Moulton Paddocks, Newmarket.

Protection of Fruit Trees. — Blinds, spruce branches, and other materials which have been employed for the protection of wall trees may be removed as soon as the fruit is set. It is a good plan to remove them gradually, as the young growth is very tender and easily damaged by wind or frost. Branches of evergreens which have been used for the purpose can be thinned for a few days previous to their complete removal. Blinds and tiffany should be placed close at hand for a time, to be used only on cold nights.

Insect Pests.—Green and black aphis will begin to be troublesome, and if not checked the trees will soon become infested. If aphis is allowed to spread it will be a troublesome matter to get rid of it, and in the meantime the young growths may become marked and even deformed, beyond remedy. Any shoots which are badly infested with black aphis should be pinched off, and the tree syringed with a very mild insecticide. In some cases it will be found necessary to use tobacco powder, which should be left on for two or three days, and then thoroughly syringed off with clear, soft water.

Disbudding Fruit-Trees.—If the shoots are sufficiently forward, disbudding may be begun gradually; but in the case of outdoor trees it should be done very sparingly at this time of the year. Commence the work at the top of the wall, since it is here that the sap flows most freely. It is enough at first to remove the growth from the front or face of the shoots. The bark must not be bruised or torn during the operation, or a permanent scar will be the result. If the shoots are too hard to pinch off with the finger and thumb, remove them by means of a sharp knife: the work can be done with the aid of a small budding knife almost as quickly as with the fingers, and all risk of tearing is avoided. The disbudding should be done with great care, as the future balance of the tree depends on the even distribution of the shoots at this period. Even disbudding produces an equal flow of sap over the whole tree, thus ensuring its healthy, steady growth.

THE KITCHEN GARDEN.

By John Dunn, Foreman, Royal Gardens, Windsor.

Parsley.—Young plants raised this season may be planted in a sheltered position as soon as they are large enough to handle, affording protection from rough wind until growth commences. Stir the soil freely with the hoe to promote a free growth.

Vegetable Marrow.—Sow seeds of Vegetable Marrow singly in small pots, placing the latter on a gentle bottom heat until the seedlings are well through the soil, when they should be stood close to the roof glass to prevent the plants from becoming drawn. When two rough leaves have formed the plants may be potted in 6 inch pots, using a compost consisting of turfy loam and well decayed manure. The pit should be kept closed for a few days, and the plants shaded from strong sun until they become established. Air should then be given in increasing quantities until the end of May, when marrows should be ready for planting in the open garden.

Globe Artichoke. — Plantations of Globe Artichokes should be made at the present time. If the ground has been prepared in winter and mixed with a good dressing of farm-yard manure, portions of the old plants may be lifted and pulled to pieces with the hands, selecting healthy suckers for stock. The latter should be planted in rows about 5 feet apart, allowing 4 feet from plant to plant in the row. If dry weather sets in, a thick mulching of farmyard manure should be applied before the ground becomes very dry.

Broccoli and Savoy.—A sowing of Broccoli should be made during the last week of April to furnish plants for winter supplies. Make the sowing in an open situation and allow plenty of room between the rows so that the plants may grow hard and compact. The same remarks apply to Savoys and Borecoles. Drills should be drawn at 1 foot apart, which will provide space for working the Dutch hoe amongst the plants to keep them free from weeds. A late sowing of Savoys and Borecoles may be made about May 15 to produce plants for spring supplies. The following varieties of Broccoli will furnish a succession provided the weather is not very severe:—Early Market, which may be cut about the middle of December, and continues to furnish heads well into January; Early Feltham, Spring White, Main Crop, Snowdrop, St. Patrick's Day, April Queen, Model, Covent Garden, White, and Victory, which is an excellent late variety.

Hoeing.—Advantage should be taken of fine days to stir the soil amongst spring-sown crops as soon as the latter have grown sufficiently large to permit of the work being done. Crops such as Winter Spinach should be hoed frequently to promote a free growth, after first dusting the rows with soot. Lettuces raised in the autumn should receive similar treatment. If slugs prove troublesome, dust the bed with hot lime early in the morning when the atmosphere is moist.

THE FLOWER GARDEN.

By Edward Harriss, Gardener to Lady Wantage, Lockinge, Berkshire.

Dahlias.—Plants which have been raised from cuttings inserted last month should be re-potted as soon as they are well rooted. This involves a considerable amount of labour, but the trouble is amply repaid later. The earliest plants may be placed in cold frames and hardened gradually, removing the lights entirely during warm weather. Seedling Dahlias should receive a similar treatment to that recommended for cuttings. The old "stools" which were placed in cold frames last month are growing freely, and may be divided, potting suitable portions in 6-inch pots. Place the pots in the same frame and keep the latter close for a few days till the plants have recovered from their check. Afterwards gradually inure them to cooler conditions. All the plants should be labelled, not only with their names but also their height and colour, so that there may be no confusion at planting time. Dahlias have few equals for massing in beds, but the colours need to be selected carefully for this purpose. The effect is often spoilt by planting too many varieties together.

The Water Garden.—Many aquatics may be planted now, but the situation must be taken into account before making a selection of the plants. Nymphæas should not be planted in lakes or pools where there are swans unless the plants are protected with wire netting. The netting should be placed at least a yard beyond the plants, supporting the wire with iron rods driven firmly into the bottom of the pool. First plant the Lilies in old baskets or nursery-flats, each holding about half-a-bushel of soil consisting of chopped loam, and if this is of a stiff character it will be an advantage. The baskets may be dropped in the water at suitable positions. Nymphæas are perfectly hardy, and need no attention after they are established beyond keeping them clear of water weeds. Aponogeton distachyon is an excellent plant for growing in small streams or pools. The plants should be turned out of their pots and the roots tied to rough pieces of turf, afterwards dropping them into the water, which should be not less than 18 inches deep. Established specimens flower during the greater part of the year, and the blossoms have a delightful perfume. Caltha palustris, the Marsh Marigold, which is now a mass of golden-yellow flowers, is a useful plant for massing on the margin of streams or pools. Other subjects that may be employed in association with water, include Spiræas, Ranunculus, Rumex, Sagittaria sagittifolia, Polygonum amphibium, Stratiotes aloides, Myosotis palustris semperflorens, Butomus umbellatus, Funkias, Osmundas, Alisma and Callas. Gunneras should be included in bold schemes of water-gardening. These plants are

unusually forward this season, and should be afforded slight protection during times of frost.

Lobelia cardinalis.—Plants may be placed in the herbaceous border now, arranging them in clumps of 5 or 6. Guard against damage by slugs. Plants in boxes intended for bedding out in June should be potted into large 60-sized pots. Keep the roots well supplied with water in the meantime.

Clarkia and Godetia.—Plants of these annuals raised in the autumn are valuable for flowering in the greenhouse during the early summer. They are also much appreciated in the flower-garden, and may be planted in groups in the mixed border.

PLANTS UNDER GLASS.

By F. Jennings, Gardener to the Duke of Devonshire, Chatsworth, Derbyshire.

Gomphrena globosa.—Seeds of this charming little greenhouse plant should be sown in a pot or pan and placed in a warm house. When the seedlings are large enough to handle, pot them three in each 4½ or 3-inch pot, in a compost consisting of rich loam, leaf-mould, sand and cow manure. Grow them in a warm house until the flower appears, and then place them in the conservatory.

Gesneras.—The tubers should be removed from the old soil and repotted into receptacles of the size most useful to the decorator. The soil should consist of a mixture of leaf-mould and peat in equal quantities together with coarse sand, wood-ashes and a little decayed cow manure. The pots should be well drained and the tubers should not be watered until the growths appear, when the soil should be soaked thoroughly. The foliage is very subject to injury by thrips, but this pest may be destroyed by fumigations. The plants, while in growth, require a moist atmosphere; the night temperature should range from 65° to 70°. Flower the plants in an intermediate-house or warm conservatory, and shade them from the bright sunshine. Plants for successional flowering may be potted at intervals.

Cuttings. — Cuttings of Ruellia, Abutilon, Strobilanthes (Goldfussia), Dichroa (Adamia) cyanea, Justicia carnea, J. aurea, and Lasiandra (Pleroma) macrantha, which were inserted in the early spring should be well rooted and ready for potting. After they are potted stand the plants on a shelf in an intermediate house. Fuchsias and Heliotropes propagated from cuttings in the late autumn and early spring require repotting. Where large quantities of Poinsettias are grown for flowering from early in November until after Christmas it is advisable to strike the cuttings at different periods, starting the old plants at intervals to furnish suitable shoots for the purpose. If plants are placed in heat now, syringed until the new growths appear, and then afforded a thorough soaking at the roots they will furnish cuttings that will flower early in November. Place the cuttings in thumb pots filled with fine, sifted loam and sand in equal parts. Make holes with a dibber, and see that the base of the cutting (which should be taken with a heel) rests firmly on the soil. Place the cutting pots in a close frame or under a bell-glass or box covered with glass. Soak the soil with water. The cuttings will root freely if bottom heat is provided.

Ripening Bulbous Plants.—Plants of Nerine Fothergillii that have completed their growth should be dried off gradually and placed in a position, in a frame or on a shelf, where the sun will shine full on them, so that they may become thoroughly ripened. Plants of Cyclamen that have finished flowering and are intended for blooming another season should be placed in a cold frame and dried off gradually.

Clivias.—Plants that have finished flowering and those still blooming should receive a liberal supply of liquid manure; the roots should never be allowed to become dry during the summer months, but as winter approaches the feeding should be discontinued and very little water afforded the roots. Clivias planted out in conservatories or Palm houses flower freely and are very effective. Specimens in pots should not be repotted until increased room is absolutely necessary.

THE ORCHID HOUSES.

By W. H. White, Grower to Sir Trevor Lawrence, Bart., Burford, Dorking.

The Cool House. — Plants of Sophronitis grandiflora that require fresh rooting materials may be attended to in this respect, as they are commencing to develop root from growths which have flowered recently. Provide plenty of drainage, and employ Osmunda fibre and Sphagnum-moss as the rooting medium. Cut the moss into rather fine portions, as when used in a coarse state this material holds moisture for too long a time, which is always inimical to the health of the young roots. The plants may be suspended from the roof, or they will grow equally well elevated on the stage just above the ordinary plants. Afford the roots plenty of water whilst they are active, but when the plants are at rest give only sufficient water to keep the small pseudo-bulbs plump and the leaves fresh and green. Bletia hyacinthina and other species that are showing signs of growth should be repotted, using a similar soil to that advised for Calanthes. Keep the plants well exposed to the light and stand them in the coolest position available. Afford an abundance of water till the growths begin to ripen and die down, when root-waterings should be discontinued gradually. Plants of Odontoglossum Rossii, O. Cervantesii and the rare O. Oerstedii having passed out of flower should be suspended close to the roof-glass and be afforded only just enough water to prevent the pseudo-bulbs or leaves from shrivelling. An excess of water whilst the plants are at rest will cause the roots to decay. In this house the various Anguloas, including A. Clowesii, A. uniflora, A. eburnea and A. Ruckeri are pushing up their flower spikes and making new growths. Where convenient it is advisable to remove the plants to a cool, shady part of the intermediate house. No re-potting should be done in the case of plants that are about to flower, but the operation may be performed immediately the blooms are cut and new roots begin to push out from the base of the young growths. For the present afford sufficient water to keep the compost just moist. Plants of Oncidium concolor are making a very pleasing show in this house, but the flower spikes should be removed early, otherwise they will weaken the plants so that growth will be delayed and even weakened considerably. After the flowers are over keep the compost on the dry side for a few weeks, but afterwards afford sufficient moisture to keep the pseudo-bulbs plump. Lycastes are flowering, and whilst the plants are in bloom it is advisable to wash the under-sides of the leaves occasionally to destroy red spider, which frequently attacks them. Very careful watering is necessary, as an excess of moisture causes the flowers to become spotted and useless.

Catasetum, Cycnoches and Mormodes.—These Orchids are commencing to grow after their winter rest, and must therefore be kept no longer dry at the roots. Immediately young growths appear at the base of the pseudo-bulbs, shake the old compost from the plants, cut away all dead roots and decayed parts, and re-pot the plants. I find the most suitable receptacle is an ordinary Orchid pot, with three holes just under the rim, at equal distances apart, and copper wire handles about a foot or 18 inches in length, these being convenient for hanging the plants close to the roof glass. The pots should be of sufficient size to accommodate the numerous roots that some of the stronger-growing species develop, for it is a disadvantage for the roots to grow outside the receptacle. Overpotting must be strictly guarded against, and plenty of drainage materials are essential. These Orchids grow and root freely in Osmunda fibre, which should be packed firmly around the base of the pseudo-bulbs. Suspend the plants on the lighter side of the East Indian house, or they may be grown in almost any house where deciduous Calanthes thrive. After re-potting withhold water until the new growths begin to develop roots from their bases, then afford moisture very sparingly, but as growth advances and roots become plentiful increase the supply gradually. As the young growths begin to form into pseudo-bulbs the plants require an abundant supply of water, which must be maintained until growth is completed. One of the principal details in the successful cultivation of these plants is to grow them as quickly as possible, so that the new pseudo-bulbs may be completed early in the season, to allow plenty of time for exposing them to the sunshine in late summer and early autumn in order to ripen.

FRUITS UNDER GLASS.

By James Whytock, Gardener to the Duke of Buccleuch, Dalkeith Palace, Midlothian.

Muscat Vines.—Muscat vines which were started at the beginning of March are flowering, and while in this stage the temperature should be kept at not less than 75°. In the daytime the thermometer may stand at 80°, rising to 90° with sun heat. When the sun is shining brightly and the temperature is at 90°, a slight damping of the atmosphere will do good, but in dull weather keep the atmosphere dry. The pollen should be distributed by tapping the wire or drawing some light article over the bunches. When the berries have set the mean temperature may fall to 70°, rising (with appropriate ventilation) to 90° during sunny days. A steady, moist atmosphere should be maintained, but to keep the foliage healthy a fairly constant supply of fresh air should be admitted, when the weather conditions are suitable. This will enable the foliage better to resist the heat of the sun, Muscat varieties being more susceptible to scorching than any others. If they seem likely to suffer from an excess of sunshine, a slight shading may be provided by syringing the roof-glass with a mixture of flour and water. The thinning of the bunches should be left until it is evident where the berries are most regularly set. Only one bunch should be left to each shoot, and the latter should be stopped two "eyes" beyond the bunch. All sub-laterals should be pinched at the first joint, and kept down to the same point. If the vines are in vigorous health, they will probably develop a large crop, but over-cropping must be guarded against. Especially does this danger exist in the case of young vines, which, when healthy, crop abundantly. When the berries are set, the watering of the inside border will require attention. Muscat vines are now grown chiefly in rather shallow, well-drained borders in the vinery. Watering should be done with the greatest caution, as a wet, sour border is very harmful. If, however, the border requires moisture, it should receive a thorough watering. If the vines are full grown, manure water may be used at this and all subsequent waterings until the Grapes begin to change colour; but this stimulant should be applied cautiously to young, vigorous vines growing in heavy soil. After the house is closed a slight dusting of vine manure may be scattered over the inside border, and sprinkled with water out of a fine-rose can.

Vines in the latest houses, which have started into growth, should be syringed twice daily, and a moist atmosphere should be maintained, until they begin to flower. The sun is now strong enough to allow of the ventilation of the vineries early in the morning. Freer ventilation is also desirable, for it gives texture and strength to the foliage, which becomes weakened under the influence of excessive moisture. In cases where two or three buds are borne on each spur, all but one (the best one) should be removed. When the point of the shoot reaches the roof-glass it should be brought, gently and by degrees, to the trellis. The night temperature should be 60°, and the day temperature 10° to 15° more. As the vines approach the flowering stage, the night temperature may be increased to 65° or 70°, according to the weather. In the day the temperature may be permitted to rise to 90° with sun heat, but the house must be ventilated freely. If the inside border has been thoroughly watered at the time of starting, it should not require any further watering until after the vines have set their fruit.

The berries of the earlier forced vines are swelling, and attacks of red spider (caused by a dry atmosphere) must be guarded against. At the same time excessive moisture must be avoided, both at the roots and in the atmosphere. The vines must not be exposed to cold winds early in the morning while the berries are still moist, or the latter will become scalded. Airing and syringing must be done with the utmost care during this changeable month

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the **PUBLISHER**, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher. — *Our Correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the* PUBLISHER; *and that all communications intended for publication, or referring to the Literary department, and all plants to be named, should be directed to the* EDITORS. *The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.*

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS, 41, Wellington Street, Covent Garden, London.** *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

Special Notice to Correspondents. — *The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

Illustrations.—*The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.*

Local News.—*Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.*

APPOINTMENTS FOR MAY.

THURSDAY, MAY 1—
Nat. Rose Soc. Spring Sh. at R.H.S. Hall, Vincent Square, Westminster. Linnean Soc. meet.

SATURDAY, MAY 3—
Soc. Française d'Hort. de Londres meet.

MONDAY, MAY 5—
Surveyors' Inst. meet.

TUESDAY, MAY 6—
Forest Gate Chrys. Soc. meet. Scottish Hort. Assoc. meet. Nat. Amateur Gard. Assoc. meet.

MONDAY, MAY 12—
United Hort. Ben. and Prov. Soc. meet.

WEDNESDAY, MAY 14—
Roy. Hort. Soc. Coms. meet. Tulip Sh.

TUESDAY, MAY 20—
Roy. Hort. Soc. Great Sh. at Royal Hospital Gardens, Chelsea (3 days).

WEDNESDAY, MAY 21—
Nat. Tulip Soc. Sh. at Royal Hospital Gardens, Chelsea (2 days). Devon County Sh. at Barnstaple (3 days). Roy. Meteorological Soc. meet.

SATURDAY, MAY 24—
Linnean Soc. Anniversary meet.

MONDAY, MAY 26—
Surveyors' Inst. meet.

TUESDAY, MAY 27—
Messrs. J. Waterer and Sons' Rhododendron Sh. at R.H.S. Hall (4 days). Bath and West and Southern Counties Soc. Sh. at Truro (5 days).

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich—48.5.

ACTUAL TEMPERATURES:—

LONDON.—*Wednesday, April 23* (6 P.M.). Max. 63° Min. 46°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—*Thursday, April 24* (10 a.m.): Bar. 29.8. Temp. 58°. *Weather*—Overcast.

PROVINCES.—*Wednesday, April 23.*—Max. 56° Liverpool; Min. 46° Shields.

SALES FOR THE ENSUING WEEK.

WEDNESDAY NEXT—
Hardy Bulbs and Roots at 12; Japanese Liliums in cases, and Miscellaneous Bulbs, at 3.30; Palms and Plants at 5. At 67 and 68, Cheapside, E.C., by Protheroe and Morris.

FRIDAY NEXT—
About 500 Odontoglossum Hybrids, also Established Orchids in variety at 12.45, by Protheroe and Morris.

The Primula Conference.

The custom, which has been followed by the Royal Horticultural Society for many years, of holding periodical "conferences" on one or other kind of florists' flowers is invaluable, not only for facilitating the exchange of views between experts, but also for indicating the progress of our knowledge, and the changes of fashion or of taste to which cultivated plants are subject. A comparison of the report of the last Primula Conference, which was held in 1886, with that of the conference which took place last week, shows in the most striking manner not only how great has been the increase in our knowledge of the genus Primula and how important are the new additions of this genus to our gardens and plant houses, but also how considerable has been the general change of taste during the 27 years which have elapsed since the Primula was last discussed in conference. In the reports of the earlier meeting (see *Gard. Chron.*, April 24, 1886) the Auricula had pride of place; its origin gave rise to animated discussions, and the exhibits of this then extraordinarily popular flower evoked general enthusiasm. From the earlier Conference, though large numbers of species were shown on that occasion, there were, perforce, lacking the remarkable Chinese species, the introduction of which in recent years has done so much to renew interest in this genus of plants. The records of the 1886 Conference do not enable us to say with confidence whether the Chinese Primrose had attained to the supreme position as a florist's flower which it holds at the present day; but the fact that P. obconica is passed over without comment in the report indicates—what, indeed, is known to all present-day gardeners—that in 1886 this species had not yet begun to exhibit any remarkable degree of variation.

Nevertheless, despite the evidence of change which is supplied by a comparison of the past and present Conferences, it is gratifying to discover from the same source that not a few of those who figured prominently in the former Conference took part in that held last week. Thus Sir John Llewelyn, who presided at South Kensington in 1886, occupied the chair at the Vincent-square meeting. Miss Jekyll, who contributed to the present Conference a valuable paper on "Primulas from the Garden Point of View" was already at the earlier meeting contributing to the education of public taste by exhibiting "a hill of moss dotted over with border Primroses in white, crimson, yellow and red that had a pretty effect in their uncommon setting." Further, as our detailed reports show, other veterans who figured prominently in the earlier Conference are, as we rejoice to know, still with us, inspiring us with their example and informing us with their knowledge.

From any estimate which we may make as to the change or development of fashion it is impossible to omit mention of the greatly extended use to which Primulas are put in Alpine gardening—a custom which none has done more to foster than Mr. Reginald Farrer, who, however, on the present occasion left his own familiar mountains and discoursed on the no less fascinating subject of "Primula hybrids in Nature." Although, as shown by the specimens which were exhibited at the Conference, the choice of Primulas at the disposal of the gardener is extraordinarily great, yet there is every reason to believe that further exploration of the more inaccessible parts of China will result in the introduction of many new species of this plant. Such is the opinion of Professor Bayley Balfour, whose knowledge and experience of the Primulas of Asia are unrivalled. Not only is exploration of that Continent destined to bring to light new forms, but it is calculated also to throw light on the affinities of some of our known species; and it is much to be hoped that a thorough exploration of the geographical distribution of such species as P. sinensis, P. obconica and P. Listeri may be undertaken in the near future. Such exploration whilst adding to the number of species would, there is no doubt, help to lift the veil of mystery which covers the origins and relations of these Primulas, whose extraordinary variation in cultivation is such a remarkable and obscure phenomenon. It used to be customary for the Universities to send young and promising botanists to the tropics in order that in their "Wanderjahr" the students might gather experience and receive inspiration. The custom is good, and we can imagine no better subject of investigation than the phytogeographical survey of the homes of the chief Chinese species of Primula.

Among the new Primulas to which the attention of the Conference was directed, the form described by Professor Bayley Balfour as P. sinolisteri is of special interest, inasmuch as it appears to constitute a P. obconica-like form, but is destitute of the irritant hairs which render P. obconica so obnoxious to those who have to handle it. P. sinolisteri is a free grower, and though most of the plants have white flowers it is already revealing its power to vary by producing some plants with pale magenta blossoms. Inasmuch as magenta is the topmost member of the series of colour-forms exhibited by P. sinensis and also by P. obconica, it may be predicted with some confidence first that the white-flowered forms of P. sinolisteri are dominant whites carrying but concealing colour, and second that out of it will come in course of cultivation red and blue forms like those with which we are familiar in the Chinese Primrose.

NATIONAL ROSE SOCIETY.—The first spring Show of the National Rose Society will be held in the Royal Horticultural Hall, Vincent Square, Westminster, on Thursday, May 1. Schedules and particulars may be obtained from the hon. secretary, Mr. EDWARD MAWLEY, Rosebank, Berkhamsted.

SIX NESTS IN SIX BASKETS. — At Messrs. CHIVERS & SONS' farms near Cambridge and within a short distance of their jam factory six fruit baskets were tied together and hung in a cart shed, where a number of men are often at work. Birds have built nests in each of the baskets, and in two instances the nests contain eggs. The builders include blackbirds, song thrushes, and missel thrushes. The baskets are



THE GIPSY MOTH (LIPARIS DISPAR (L.))

Male moth, brown; female, white.

being left undisturbed, and it is hoped that each mother will hatch out her brood.

Presentations to a Gardener.—Mr. H. G. Lockhurst has received presentations from the garden staff at Roby Hall, Torquay, and the members of the St. Mary Church Horticultural Society, Torquay, on the occasion of his relinquishing his post as gardener at Roby Hall.

A National Park at Grenoble.—We learn from the *Guide Général*, March, 1913, that Mr. Mathey, Conservator of Forests at Grenoble, is endeavouring to secure in the mountains of l'Oisans a national park in which will be conserved the Alpine flora and fauna of the region. It is hoped that a site of some 4,000 hectares may be secured, and it is proposed to establish the park in the mountain region situated between la Bérarde and St. Christophe. Beside serving as a nature reserve the park will be afforested, so that the denudation of the mountains may be arrested and the plain of Bourg d'Oisan may be preserved from the danger which now menaces it owing to the vast amount of rock and gravel (45,000 cubic metres) brought down annually by the Vénéon.

Gardening Conferences in Vienna.—Recognising the fact that many gardeners have but little opportunity or leisure for reading, and that therefore they are apt to be ignorant of the progress of horticulture, the Vienna Horticultural Society organised last year a Garden week devoted to the discussion of horticultural subjects. The meeting, which was well attended, was held from December 9 to 11, 1912. The report of the meeting, now issued, makes an interesting volume, and contains many papers of importance, among which may be noted the following: "Modern Forcing Methods," by Prof. Molisch; "New Methods of Cultivation," by Mr. Louis Wolf; "Artificial and Natural Manuring of the Garden," by Prof. H. Kaserer; "The Use of Mendelism in the Garden," by Prof. E. V. Tschermak; "House and Landscape Gardening," by Mr. F. Lebisch; and "Recent Work on Garden Pests," by Prof. L. Linsbauer and Dr. L. Fulmek. We hope on a subsequent occasion to refer in more detail to the excellent work done by the Vienna Society in disseminating knowledge among the gardeners of the empire.

A Raspberry-Strawberry.—It is stated in the *Canadian Horticulturist* (April, 1913) that a Toronto grower has raised a plant combining the qualities of the Raspberry and Strawberry. From the account given in our contemporary it is not possible to say how this feat has been performed. The new fruit is said to be produced on bushes about 18 inches in height. The branches are thorny and the leaves are said to resemble those of the Strawberry, though the resemblance is not apparent from the illustration which accompanies the article. Pending fuller details than are at present available, some hesitation in accepting the Raspberry-Strawberry may be not unjustifiable.

The Cedars at Wilton House, Salisbury.—A correspondent, writing in a recent issue of *The Field*, gives the history of the Wilton Cedars as furnished him by the late Lord Pembroke, who stated that "While many have thought Cedars were first brought here by John Evelyn (1620—1706), the famous Surrey publicist, of Wotton, Dorking, who travelled abroad at an early age, yet the credit belongs to the fourth Earl of Pembroke and first Earl of Montgomery, who was Lord Chamberlain of the Household to Charles I., and Chancellor of the University of Oxford. He, together with the third Earl of Devonshire (father of the first Duke of Devonshire) and the Bishop of London of that day, sent out two collectors to the Holy Land, who returned to London in 1640, with, among other things, some Cedars, now flourishing in Wilton Park." *The Field* gives the following further information:—"Particulars of the Wilton Cedars are given in *Trees of Great Britain and Ireland*, by Mr. Elwes. He quotes a letter of Dean Herbert, written in 1831, which states: 'It was known to the late Earl of Carnarvon that the Cedars at Wilton were kept by his grandmother, the Countess of Pembroke, in pots in her window till, growing too large, they were planted upon the lawn. . . . They must have been raised as early as 1724. The oldest Cedars at Wilton are probably between 110 and 120 years.' Mr. Elwes says he saw these trees in 1903 and measured them carefully; the best was then about 108 feet high and 21 feet in girth, with a spread of 109 feet. He also relates a story told by Mr. Challis, gardener at Wilton, of a large Cedar cut down there in 1874, which had a bole 36 feet in circumference, and 236 concentric rings in transverse section. Mr. Elwes says this would go to prove that the tree must have been planted there in 1638, before Evelyn's time, and was not only the oldest but also the largest Cedar on record in England. He also states in his book that 'We have no certain evidence as to the earliest introduction of the Cedar into England,' and quotes Loudon, who considered that Evelyn was most probably the introducer of the tree. There does not appear to be any Cedar in existence now that was planted in the early part of the seventeenth century."



Fig. 118.—Primula listeri: colour of flowers varying from rose-lilac to white. (See page 275).

Agricultural Research.—The Board of Agriculture and Fisheries propose to award in October next twelve Research Scholarships in Agricultural Science, of the annual value of £150, and tenable for three years. These scholarships have been established in order to train promising students under suitable supervision, with a view to their contributing to the development of agriculture, either by carrying out independent research, or by acting in an advisory capacity to agriculturists. They will be granted only to students who show distinct promise of capacity for advanced study and research in some one of the sciences bearing on agriculture. Applicants must be graduates of a university or holders of a diploma of a university or college of university rank, and application should be made not later than June 9 next on a form to be obtained from the Secretary, Board of Agriculture and Fisheries, Whitehall Place, London, S.W.

Rare Books.—At a sale at Sotheby's on April 3 and 4, the following were amongst the works disposed of:—*American Physitian; or a Treatise of the Roots, Plants, Trees, Shrubs, Fruit, Herbs, etc., growing in the English Plantations in America, with a Discourse of the Cacao-Nut Tree and the way of making Chocolate*, by W. Hughes, printed in London, 1672, £7 (Sotheran); *A Treatise of Fruit Trees, showing the manner of Grafting, Setting, Pruning, and Ordering of Them, together with the Spirituall use of an Orchard*, with a plan of a garden, Oxford, T. Robinson, 1653, £3 3s (Tregaskis); Markham's *Certain Excellent and New Invented Knots and Mazes for Plots for Gardens*, first edition, 1623, £7 (Pickering); *An Herbal for the Bible, containing a plaine and familiar exposition of such Similitudes, Parables and Metaphors, [illegible] the Old Testament and the New[illegible]*

taken from Herbs, Plants, Trees, Fruits, and Simples by observation of their Vertues, etc., by Thomas Newton, London, 1587, £7 (Ellis); John Parkinson's *Paradise in Solo*, first edition, clean copy in original calf binding, 1629, £18.

SWEET PEA TESTIMONIAL.—The testimonial raised by a committee consisting of members of the National Sweet Pea Society, to Mr. E. VINER, Frome, Somerset, the raiser of one of the forms of Countess Spencer Sweet Pea in 1901, amounted to £70. Mr. VINER is an invalid, and unable to earn his living. The amount subscribed was £76 6s.; the cost of printing and postage being £7 16s. 8d., leaving a balance of £68 9s. 4d., which was afterwards made up to £70. There were 106 subscribers, and donations were received from all parts of Great Britain, as well as Germany, the United States, South America, and South Africa. The National Sweet Pea Society contributed the sum of £10. Mr. W. CUTHBERTSON acted as treasurer.

DAMAGES AGAINST A HORTICULTURAL SOCIETY.—Consequent upon the judge's decision against the Kirkcaldy Horticultural Society in the aviation case, reported on p. 47, the members have each been charged £2 13s. 3d. at the instance of the pursuer in the case, and the Society £116 16s. 6d. expenses, for which the members are held liable. This sum is in addition to the Society's own expenses in the case, which are very heavy. An effort is being made to raise subscriptions to pay the amounts due, and to place the Society on a sound basis once more.

LEGACY TO MR. J. PIERPONT MORGAN'S GARDENER.—It is gratifying to learn that amongst the numerous legacies left by the late Mr. J. PIERPONT MORGAN to his employees, his gardener, Mr. J. F. MCLEOD, receives an annuity of £250. Mr. MCLEOD took charge of the estate, farm and garden at Dover House, Roehampton, in 1889, at that time the property of JUNIUS SPENCER MORGAN, father of the late Mr. JOHN PIERPONT MORGAN.

AMERICAN GOOSEBERRY MILDEW.—The Board of Agriculture and Fisheries have received information that the summer stage of American gooseberry mildew (Sphærotheca Mors uvæ) was discovered in a Kent garden on the 14th inst. and in a Cambridgeshire garden on the 15th inst. Gooseberry growers are advised to examine their bushes carefully, and should any sign of disease be found to spray their bushes with a solution of liver of sulphur (1lb. to 32 gallons of water).

ALPINE PLANTS IN A SWISS MOUNTAIN GARDEN.

A PORTION of the rockery in the Alpine garden of the Pont du Nant, Switzerland, is illustrated in Fig. 119. It affords some idea of the wealth of flowers produced in this congenial mountain garden, where are many rare plants growing freely and flowering profusely in their proper season after a long winter rest under the snow. During the month of June the garden is a blaze of colour, with beautiful carpets and sprays of flowers. Numerous Saxifragas of the encrusted and Kabschia sections are planted in rocky crevices and form compact little clumps. There are several tufts of the graceful little Saxifraga crustata, with its silvery rosettes of narrow leaves, and sprays of whitish flowers. This species is of easy cultivation in this country. Near the top of the stonework may be seen a small tuft of Asperula Gussonii completely covered with its charming pale pink flowers. This plant grows best in a sunny position in well-drained, gritty soil. At the lower right-hand corner of the illustration is shown a carpet of Arenaria juniperina, with short grass-like leaves and masses of white flowers in loose panicles. This Turkestan plant is also easy to cultivate in British gardens. The most charming subject of all in the picture is the beautiful Wahlenbergia Pumilio, which is shown near the centre of the stonework. The plant forms a close tuft of sharp-pointed, glaucous leaves, each barely an inch high, and is covered with large, rosy-lilac flowers during the early summer months. *W. I.*

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

SULPHUR FOR CHRYSANTHEMUMS.—Like your correspondent, *F. E.*, I was curious to see the result of incorporating flowers of sulphur with the compost for Chrysanthemums, and I experimented with about 100 cuttings in 20 varieties. They were inserted on January 1, and placed in a propagating case in a cool greenhouse, by the side of others inserted in soil without the sulphur. By the middle of February the sulphur-treated batch had made scarcely any roots, whereas the others were well rooted and ready for potting. I kept the former in the case till the end of February, when I found a few varieties, such as F. S. Vallis, Hon. Mrs. Lopes, and Mrs. A. T. Miller, had rooted fairly well. I then potted these, using sulphur again in the soil, but after a few weeks they had made such weak, unsatisfactory growth that I discarded them. Mr. Méker is reported to have stated that it is a sure preventive of disease, but it would seem that as a result of the sulphur the plants treated would be too weak, and therefore more subject to disease. *Owen Moring, The Old Hou Gardens, Freshford, Somerset.*

———I followed the recommendations Mr. Méker, adding sulphur at the ra of ¾ lbs to 100 lbs. of soil, and i serted all my cuttings at the begi ning of December, 1912, and not 10 per cen of them formed roots, although, as your corre pondent mentions, most of them callused. I le them till the end of January, and finding it wa useless to keep them, they were thrown away and a fresh batch inserted in the same soil mix ture, without the sulphur. The second batc have all rooted, and are potted in large 60's. Th cuttings of second batch were taken from the sam plants as the first, and are healthy in every re spect, although my Chrysanthemums are always susceptible to rust disease in the autumn *A. J. R.*

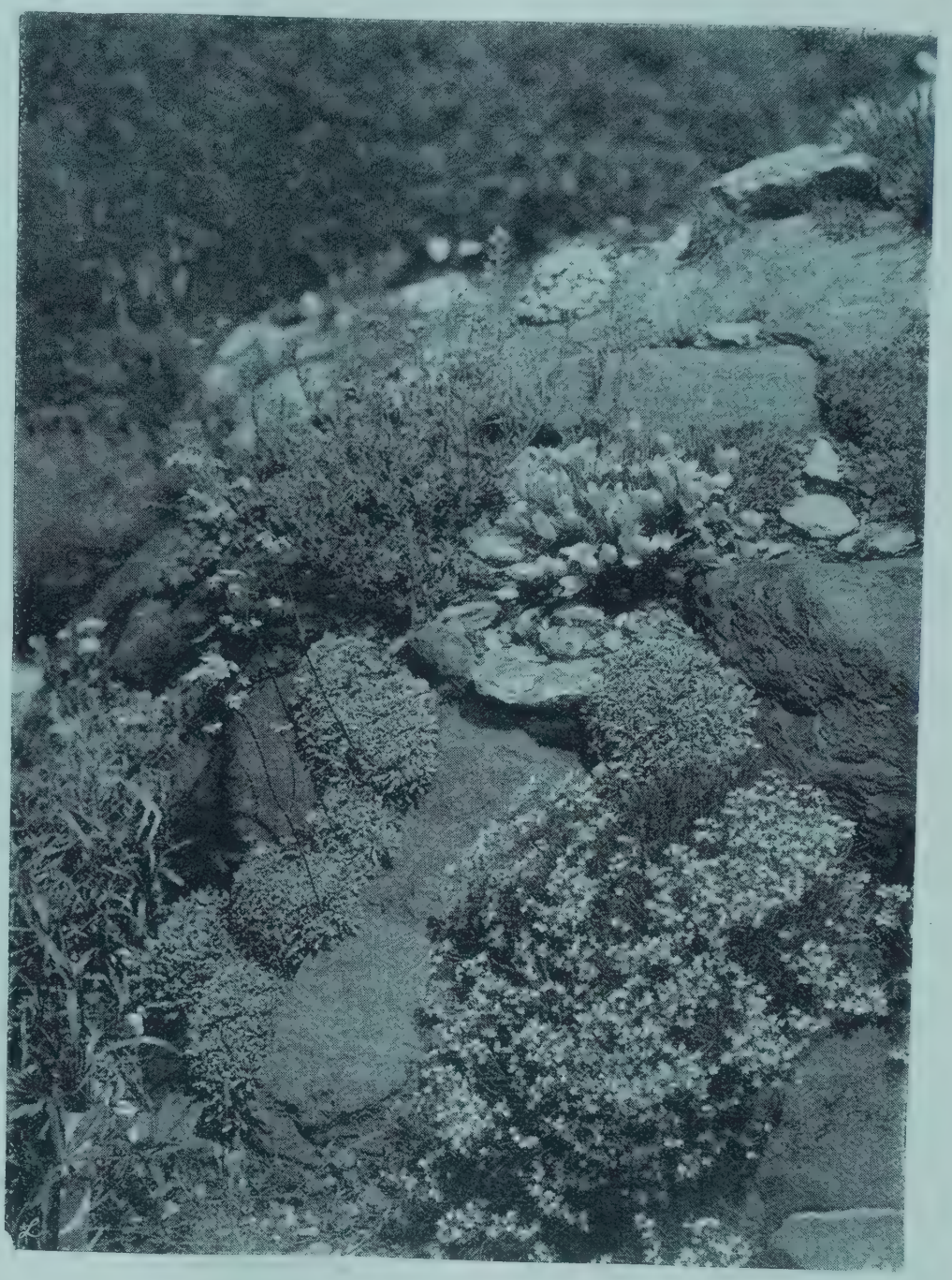


FIG. 119.—ALPINES IN THE ROCKERY, PONT DU NANT, SWITZERLAND.

———I read with interest the note by *F. E.* on p. 223, as I had nearly the same experience. I inserted a batch of cuttings at the end of December with sulphur in the compost as directed by Mr. Méker. It was a considerable time before the shoots made any roots, but they did not flag until they formed roots, then they deteriorated. They were thrown away and I inserted another batch in the same compost without the sulphur; these later plants were a success. *A. B. Spottiswood, Marlands Gardens, Itchingfield, Horsham.*

JUVENILE CHARACTERS.—The article in your recent issue suggests a large and difficult problem, and one which, as you say, must be tackled. You refer to certain plants, Ivy, etc., which show these characters, and I would suggest that seedling fruits offer a further valuable field for this study. That a progressive ameliora

tion is often shown in these is without doubt, and this opinion has been expressed by many pomologists, even as far back as 1618, when Lawson pointed out that "fruits grow better and pleasanter by time." Decaisne, in his detailed study of Pear seedlings, remarked the loss of certain characters, such as woolliness and thorniness of the stem, as of frequent occurrence. There are too many authenticated cases of new seedlings having been almost rejected on account of small size, but, saved by chance, they gradually improved in size and quality. The Passe Crasanne was at first very thorny—a character which it has now entirely lost. From the frequent presence of thorns on young seedlings has arisen, most probably, the legend of fruits reverting to wild forms—an opinion which yet requires the support of actual proof. The so-called "improvement" by grafting may also be due to this cause. The subject has an especial interest for students of heredity, as, if it has to be considered not only *if*, but also *when*, characters appear, it adds an interesting complication to the interpretation of results of breeding experiments. *E. A. B.*

Saxifraga Faldonside.—On page 214 it is stated that S. Faldonside was "accidentally distributed with S. Boydii" and that "there appears to be considerable confusion as to the identity of Mr. Boyd's several plants." S. Faldonside was not accidentally distributed with, but as, S. Boydii. It came about in this way. Seedlings were raised from one of the earliest flowerings of the original plant. These, on flowering, were considered to be so near, and others identical with, the parent that they were distributed as S. Boydii. Later differences were observed which caused inquiry to be made as to whether all the seedlings had been raised from one plant. The above statement is, in effect, the answer to that inquiry. Faldonside is characterised by shapely, well-rounded flowers, the petals are much imbricated and the circular form of the flower remains to the last. In S. Boydii the flower inclines to "starry" with age, the petals separating when the flower is about half developed. Both are highly desirable varieties, though Faldonside is the better. Cherry trees is a third form less tractable than the others, and in not a few instances having the reputation of being a shy bloomer. Should any readers know the secret of making it flower freely, I, for one, would be obliged for the knowledge. *E. H. Jenkins.*

Effects of a Changed Soil.—The origin of the globular or turnip-formed root appears to be due to the mechanical hindrance to the elongating downwards by a stiff soil. Pliny tells us that the Greeks in his day discovered how to change the rape into the turnip, by sowing the seeds in a stiff soil. The rape and the turnip are varieties of Brassica campestris. M. Carrière sowed the seeds of the wild radish (Raphanus maritimus) in a light alluvial soil and in a very stiff one. In the former was a greater percentage of long roots, and in the latter of turnip-formed ones.* M. Languet de Sivry had previously noticed that seeds of short-rooted carrots, when sown in the alluvial soils of France, yielded in the first generation a number of long-rooted plants. Many were exactly similar to the common wild form.† Lastly, I prepared a soil of very fine earth much mixed with sand, and sowed turnip-radish seed in it; 60 per cent reverted to the wild form. *G. H.*

Rates on Glass-houses.—The editorial note to Mr. Pearson's letter on pp. 255-6 disposes of his contention that glass-houses are not subject to rates, but only the land under them. I built two large houses a few years ago, and the assessors at once came to value them. They estimated the letting value at £12 per annum, and put the rateable value at £10. As rates are high in my parish, I pay about £2 15s. per annum in rates upon the houses. As to glass-houses being trade fixtures, that proves nothing, because manufacturers' fixed machinery is rated, at least in some districts. The special grievance of glass-house nurserymen is that, while their structures are rated as buildings, so that they do not get the benefit of the Agricultural Rates Act, they are not counted as buildings in relation to the new land duties. Whether movable glass houses will be rateable or not remains to be proved. I merely gave Mr. Pullen-Burry's statement that they would be exempt, not giving it as my own opinion. As movable machinery is not rateable, it is not clear that movable glass-houses should be. Probably the question will have to be settled in a court of law. *A Southern Grower.*

Lathyrus sativus as Food for Horses.—Mr. Jackson (p. 240) speaks of "mottled" seed. I do not know what is the colour of seeds of plants grown in India, but we grow a plant here under this name, which is described by Mr. Alvin C. Beal, in *Bulletin* 320, from Cornell University, New York, U.S.A. On page 674 of this pamphlet Mr. Beal states "the height is 2 feet, the colour of standard and wings Forget-me-not blue, and the reverse side heliotrope." This description fits the plants we grow. From these plants I have saved seed for several seasons, and have not yet seen a seed that could be described as of a "mottled" colour. I should say that a fully developed and ripened seed is a dull brown-green colour, undeveloped seed a bright dark green. The seeds mixed in a sack would have a mottled appearance—that is, mottled in two shades of green, and this is probably what Mr. Jackson means. If my view is the correct one, the point is of some importance to stockfeeders on the alert for poisonous seeds of Lathyrus sativus. To those interested, on page 674 of the afore-mentioned *Bulletin* it states that in 1671, George, Duke of Württemburg, forbad the use of these seeds as food for men, horses, cattle, or swine, as the eating of them caused a sudden rigidity of the limbs, which was then regarded as incurable. Poultry, with the exception of geese, would not eat the seed, and, strange to say, geese are not supposed to have suffered any ill effects. A good illustration of the plant is given on page 668 of the *Bulletin*. I enclose a few seeds for your inspection. *John Edwards, Sylfain Gardens, Welshpool.*

Early Irises.—The last words of the admirable article on dwarf Irises in your issue of April 12, p. 229, set me thinking: "Let no one plant these Irises in the shade and expect them to flower." I took an early opportunity of looking again and more carefully at one of the most beautiful things in the garden just now. Completely in the shade of a well-developed apple tree is a bold clump of Iris Statellæ, which has been steadily opening flowers for about a week. It covers some two square yards, say, six feet by four, and I counted over 200 flower stems on it apart from several that have been already cut for the house. Each stem carries two flowers or buds. The variety was received as I. olbiensis alba, but it has also been labelled Statellæ, and it agrees exactly with Miss Armitage's description, the pale greenish-white being very delicate and beautiful. It is on a heavy soil sloping south which dries well in summer. These Irises may do better if fully exposed, but it is clear that we cannot dogmatise about them, and many of them are certainly worth trying where the shade is not dense and where the drainage is good. I. delicata is a fortnight earlier, but inferior in size and colour of flower, as well as dwarfer. One of Mr. Caparne's hybrids which was not mentioned by Miss Armitage is La Perle, a clear soft yellow, which is opening now with Statellæ. This also is extremely free flowering, and is much more strongly scented of the Lily-of-the-Valley. The Juno Irises have been exceedingly fine this spring, including I. orchioides and I. Willmottiana. The most beautiful and vigorous of them is the bold yellow and white I. bucharica, which is perfectly hardy, and has been magnificent for a fortnight. One established root carries eight growths and over 30 flowers, and a single stem of a fine form from the late Sir Michael Foster's garden has seven flowers and buds on it. Can anyone say if this species seeds freely in this country? It received the First Class Certificate of the R.H.S. in 1902, and is still far from being well known. *R. W., Colchester.*

Marguerite Mrs. F. Sander (see p. 248).—This beautiful flower found many admirers here last summer; in fact no one could fail to admire it as a bedding plant in masses. It is undoubtedly weak in the flower stems, but this defect is not noticed when planted in masses outside, but I am not so satisfied with it under glass. It is soon infested with aphis, and, until the advent of this variety here, we never saw the leaf miner on any of our Marguerites. I am sceptical about the fixity of this Marguerite, and am very much afraid it may revert, as did the whole batch of Queen Alexandra a few years ago. I have noticed several single flowers on our pot plants, and a very large number with pinkish centres, making the flower identical in form with Queen Alexandra when the latter was first introduced. *A. J. Elgar, Killarney House Gardens.*

Primula Conference Impressions.—Whilst at the Conference listening to the enthusiasts who glorified the flower of the hour, I was reminded of the opening remarks of the late Dr. Maxwell T. Masters at the Conifer Conference held at Chiswick in 1891. In introducing his address on "Some Features of Interest in the Order of Conifers," Dr. Masters said: "About this time last year, in this very place, Mr. Shirley Hibberd, whose presence on occasions like this we so greatly miss, declared in the emphatic manner characteristic of him, that 'the Dahlia is the most wonderful of all flowers.' Nobody gainsaid him. A short time afterwards, also in this place, under like circumstances, the speaker asserted that 'the Chrysanthemum was the most wonderful of all flowers.' Still nobody contradicted him." And, although it did not find expression in so many words, this spirit pervaded the lectures at the Primula Conference, and when we saw the extraordinary variety of forms and habits of the plants in the leaf and flower or on photographic paper, the truth of it became almost irresistible. There were to be seen Primulas from the lowland woods of England, cheek by jowl with their brighter cousins from the European Alps, and others from the majestic Himalayas and the highlands of China and Japan. Mention was also made of Primulas from America, one of them, P. suffrutescens, being described as "free and hardy, one of the best garden Primulas in America." A surprising geographical distribution. But this was far from being all of moment. Many of the types were to the ordinary garden lover most "un-Primula like." Some of the spicate kinds might well be said to be Primulas trying to look like the flowers of the British Orchis maculata. Primula Forrestii, with its lowly-growing tuft of foliage and long branch-like root which forces its way deep down (6 ft. or more) in the crevices between boulders in search of moisture, when out of flower might well be likened to the pink Thrift. The photograph of this Primula induced the surmise as to whether such a deep-rooting medium as the long roots suggested is really essential, or whether under cultivation Primula Forrestii, when relieved of the necessity for dipping down deeply for moisture, would not behave as does the Thrift when grown in gardens and form a mat of fibrous roots. Because a plant in nature grows in a certain manner and under certain conditions, it is not always wise to conclude that those former conditions are the only ones under which such plants will thrive. It may rather be that those are simply the conditions under which it has, perforce, to grow. But with "difficult" plants, which under ordinary conditions refuse to adapt themselves, no one will gainsay the value of Prof. Balfour's remark that collectors who carefully note not only the altitude at which they find plants, but also the special conditions under which they are growing render a great service to horticulture. Several persons expressed the opinion that the limited discussion was hardly worthy of the excellent papers or of the importance of the genus. This, I fancy, was due to three causes—the ignorance of the audience (for the very rare species were chiefly treated), the comprehensive scope of the papers, and lastly, but perhaps not least, the unventilated state of the lecture room. *B.*

The Long-stemmed Jersey Kale.—All the plants from seed sown in a garden at Bournemouth failed to produce the usual stem of five or more feet in height in Jersey. The custom there is to strip off the lower leaves for the cows. Doing this, however, I found had no effect upon the stalk; but the plants, whether the leaves were removed or not, produced abundance of leafy side shoots, like some cultivated Kales, but not close heads, as in Brussels Sprouts. They sent up flowering shoots, but the whole plant is about eighteen inches in height. *George Henslow.*

* *Origine des Plantes Domestiques, demontrée par la culture du Radis sauvage.*

† *Experimental Evolution*, by De Varigny, p. 203.

SPRAYING TRIALS AT WISLEY.

A trial of spraying machines was held at the Royal Horticultural Society's Gardens, Wisley, on April 23. Fine weather favoured the event, but did not tempt more than about a score of visitors to put in an appearance. The judges were Professor Maxwell Lefroy, Messrs. E. S. Salmon, F. J. Chittenden, Cecil H. Hooper, Henry Hooper, C. R. Fielder, and S. T. Wright. The work was done very thoroughly, the judges looking closely into the inner mechanism of the machines as well as seeing them put to the practical test.

The points to which the judges directed particular attention were: (1) The suitability of the machines for use with various washes; (2) general construction, including simplicity and accessibility of parts, ease of working and repair, replacement of parts, facilities for cleaning, durability, etc.; (3) the efficiency of the nozzles; and (4) the cost of the machines and accessories. The various machines were tried with lime wash, containing about as much lime as would be included in ordinary Bordeaux mixture. The efficiency of the nozzles was tested by directing the spray on to sheets of brown paper fixed to a temporary fence, as well as by casting it into the air. The only important point that could not be tested was the movability of wheeled machines on the rough ground of a fruit plantation, the trials being conducted in a smooth gravelled yard. In no case was the nozzle clogged, although the lime wash was supplied unstrained, and the competitors were required to pass a considerable quantity of it through their machines.

Syringes.

Messrs. G. and W. Purser, Ltd., 92, Hatton Garden, London, showed the Arnold syringe. The feature of this implement is that the nozzle requires no bend or elbow, the spray being directed either straight ahead or at an angle by simply turning the syringe in the hand. It has really two nozzles in one. When the bent nozzle is turned down the spray goes through the straight one; but on the position being reversed, a ball falls automatically and prevents the spray from going straight, so that it finds its way out through the bent nozzle. The idea is ingenious, but the arrangement did not seem to work quite smoothly in practice. Apart from this, the spray produced was satisfactory.

The syringe entered by the Four Oaks Spraying Machine Co., Sutton Coldfield, is notable chiefly for the corrugated outer cover of its barrel, which is claimed to be undentable. Two grades of nozzles are supplied in addition to a straight jet, or a rose may be had instead of one nozzle. A good spray was produced.

The Abol syringe, shown by Messrs. E. A. White, Ltd., Paddock Wood, Kent, is very efficient, well made, and fitted with a drip-preventer. The nozzle produces a particularly good spray.

Messrs. Wm. Cooper and Nephews, Berkhamsted, sent one of their Protector syringes, the distinguishing feature of which is that the nozzle has a gauze strainer at the end.

Knapsack Sprayers.

For the majority of fruit-growers some form of knapsack sprayer is the most convenient type of machine. These are of two kinds: (1) those that maintain a continuous spray by means of compressed air, and (2) those that have to be pumped all the time whilst on the back. The advantages of the former class are soon appreciated by those who have to do a day's work with them. Sufficient pressure of air is pumped into the machine after it is charged with wash to expel all the liquid without further pumping, so that the operator has only to direct the spray when he gets the machine on his back. Two sprayers of this type were entered. The Holder sprayer, shown by Messrs. Hartjen and Co., 35, Noble Street, E.C., was of very sound construction. All seams are well riveted as well as brazed, and the metal is a brass alloy which does not corrode under the influence of the now popular lime-sulphur and potassium sulphide washes, facts which are important from the point of view of safety when considerable pressure has to be put into a machine. The cylinder is charged three parts full of wash (about 3¼ gallons), and air is then pumped in until the gauge shows 75 to 80lb. pressure. This is done on the ground by means of a piston which is part of the machine. The pressure thus given is enough to spray out the whole of the liquid contents. The cylinder is slung on the back in an upright position.

The Alpha Knapsack sprayer, entered by Messrs. Robinson Bros., Ltd., Ryders Green, West Bromwich, works in a similar way to the last, but the air pressure is produced by means of an ordinary bicycle foot pump, which is detached after the machine has been charged.

The older type of knapsack sprayer, which has to be pumped all the time, was shown by Messrs. E. A. White, Ltd. (Abol), Four Oaks Machine Co., Cooper, Pegler and Co., Ltd. (Vermorel), and Benton and Stone, Birmingham (Enot's). The sprayers of all these firms seem to do equally good work, but the over-shoulder action of the Four Oaks machine is certainly no improvement, as it is awkward, and shifts the machine on the back too much.

Larger Machines.

Wheeled machines, with powerful pumps, become necessary where there are tall standard trees to spray. A good impression was made by Enot's Utility machine, shown by Messrs. Benton and Stone, Birmingham. This is in the form of an oblong, galvanised, 40-gallon tank, mounted on two large iron wheels for moving wheel-barrow fashion. The strong feature is a very powerful and easily-working pump, and the weak point is a somewhat inefficient agitator. The action of the pump causes two brushes to move against the gauze strainer and keep it clear, which is useful with a lime wash; but the brushes would be better removed when using a caustic wash, which would quickly wear them away. The machine was shown working two nozzles mounted on 6-foot lances. There are ingenious arrangements for clearing the nozzles should they become blocked.

The Four Oaks Bottle machine has an oval oak 18-gallon barrel, mounted on two large wheels for moving in wheelbarrow style. The pump is double-acting and easily removed for cleansing. Two 15 feet lengths of armoured hose are supplied, with nozzles on long lances, and there is a good agitator. The machine altogether is handy and workmanlike.

The Alpha machine differs from the preceding in being pneumatic. It consists of a cylinder to hold the charge of wash and compressed air, and a large supply-tank, mounted on a trolley, with four wheels, to be drawn by a pony. The cylinder is charged two-thirds full of wash, and air is then forced in as in knapsack sprayers. But here there is a semi-rotary pump, which is worked at intervals to keep the cylinder filled with wash from the supply-tank, and the entrance of this wash into the cylinder at the same time maintains the air-pressure. Thus the machine has to be charged with air only once for a day's spraying.

Messrs. Hartjen showed an adaptation of the knapsack sprayer in their Battery System. This is a device for charging a set of knapsack sprayers with both air and wash, the latter being contained in a large supply tub or tank placed on the ground in any handy position. The cylinder is set on a stand and charged with about 30lb. pressure of air first. Then the wash is pumped in, which increases the pressure to 100lb. or 120lb. The original pressure remains in the machine, being kept there by its own pressure on a floating ball, which falls as the wash is exhausted. Thus one charge of air lasts for a whole day's work. The knapsacks are brought back to the tub from time to time to be refilled with wash.

Small Hand Sprayers.

Small pneumatic hand sprayers, holding about 4 pints, are very useful under glass or in small gardens, or for freshening up exhibits at shows. Such machines of very similar type were shown by Messrs. Hartjen, Cooper, Pegler and Co. (Vermorel), Robinson Bros. (Alpha), and Benton and Stone (Enot's). The first two have the advantage of an automatic stop-cock, the spray being turned on by simply pressing with the finger, and stopped by its release. The Enot machine has a safety valve to prevent overcharging. The Alpha is charged with a cycle pump which reduces the cost.

Bucket Sprayers.

The Arnold bucket sprayer, with galvanised bucket and brass pump, was shown by Messrs. G. and W. Purser. The pump is double-acting and throws a good spray, the piston being worked up and down with one hand, whilst the other directs the nozzle. The nozzles are similar to those in the Arnold syringe.

The Boundary Chemical Co., Cranmer Street, Liverpool, showed a pump to fit any bucket. This was sent with only one nozzle, but it provided an excellent spray.

The awards recommended by the judges will not be made public until they have been approved by the Council of the Society on Tuesday next.

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

April 15, 1913.—*Present:* Mr. G. Gordon, V.M.H. (in the Chair), Sir Everard im Thurn, Messrs. A. Worsley, J. Odell, A. Rolfe, Rev. Canon Fowler, and F. J. Chittenden (hon. sec.).

Hose-in-Hose Polyanthus.—Mrs. Berkeley, of Spetchley Park, Worcester, sent Polyanthuses of the hose-in-hose type in which the calyx segments are exactly similar to those of the corolla.

Delayed Flowering of Amaryllis Belladonna.—Mr. Odell referred to the failure of Amaryllis Belladonna to produce flowers in the past autumn, and stated that the aborted flowers were now being developed. Mr. Worsley stated that the same thing had happened in his garden after wet summers.

Odontioda Patricia.—Mr. R. A. Rolfe exhibited paintings and flowers of five seedlings obtained by Messrs. Charlesworth and Co. from Odontioda Charlesworthii (Cochlioda Noetzliana × Odontoglossum Harryanum) crossed by Odontoglossum Phœbe (O. cirrhosum × O. crispum), and showing a remarkable range of colour variation from the same capsule. Two were of a peculiar shade of dark claret red, and another brilliant orange-brown, these being self-coloured except for a little yellow on the lip. A fourth was yellow with large transverse red blotches, and a fifth claret-purple with a darker mottling. The differences in shape were not great except in the lip, the fourth being most like the Odontioda parent, and the others more deltoid, as in the Odontoglossum. Flowers of both parents were also shown.

Epidendrum kewense.—Mr. Rolfe also showed a series of paintings of E. kewense with its parents and offspring. The bright yellow E. xanthinum crossed with the deep purple E. evectum gave the salmon-coloured E. kewense. The latter re-crossed with the original purple species gave purple hybrids with a yellow crest (not a purple crest as in E. evectum), but re-crossed with the yellow species gave flowers of a reddish salmon colour, one, however, being more orange-coloured. When E. kewense was self-fertilised the offspring showed a gradation between the deep yellow of E. xanthinum through various shades of salmon to cerise and light rosy purple. The two extremes were primrose yellow (much lighter than E. xanthinum) and clear purple with a white crest touched with yellow in the centre.

PRIMULA CONFERENCE.

CHINESE SPECIES OF PRIMULA.

By Professor Bayley Balfour.

Professor Balfour's lantern-slide and mounted photographic illustrations depicted a very wide range of interesting species of the Chinese Primulas. He considered those of the cortusoides section to contain the finest and most valuable garden plants, and drew especial attention to the plants of P. Veitchii, which were on the side table. Such woodland species as P. geranifolia are all hardy, and have characteristic tufts of Geranium-like leaves and beautiful flowers. P. pycnoloba, shown on the screen, is a unique species possessing an exceptionally long calyx, from which emerges a small claret-red corolla. There are, said Prof. Balfour, two distinct types of the well-known P. malacoides, the more generally-grown form, with small leaves and slender, graceful inflorescences, and another which has a much coarser habit. P. Forrestii has been found in China mimicking the sea-shore Thrift; the foliage grows in dense, prostrate tufts and long, woody stem-like roots pushed deep down the crevices of the rocks in search of moisture. These Primula roots are fully 6 feet long, and the plants live to be over 200 years old. The beautiful P. spicata may be grouped with such species as P. Reidii and P. Wattii, which were on show in the Hall; this biennial species has sessile flowers of a bright blue, and the plant is covered with meal. P. tatsienensis, a hardy species, forms compact tufts from which rise pretty pale lavender-coloured flowers. P. umbrella is an appropriately named miniature species; the flowers of P. bella, like those of P. pulchella, contain little balls of cotton in their throats. A species (P. modesta) of which the lecturer expressed great admiration bears a quantity of gold meal, and should form a fitting companion to the silvery P. frondosa.

The Primulas with hairy leaves are not hardy, and fall a prey to the dampness of our winters, so they must be kept quite dry during their period of rest. By the aid of a map projected on the screen, the very limited and scattered areas from which plants have been collected was demonstrated, and it was made apparent that "only the fringe of the Chinese Primulas has been touched," and that in the near future large numbers of new and valuable species may be expected. In fact, Prof. Balfour said, fresh material was even now arriving, for on the eve of the conference he had received from Mr. J. C. Williams a photograph, which was exhibited, of a beautiful Primula discovered by Mr. Forrest. But unfortunately no information accompanied the photograph, which, as could be seen, depicted a very desirable plant. Another very recent find of the same collector is a sturdy Primula of quite distinct habit of inflorescence; the large orange-yellow flowers being borne in compound umbels. The name of this species, in the vernacular, is "The Glory of the Marsh."

Professor Bayley Balfour pointed out that the Chinese species equal or outnumber all other known species of Primula. He referred to the admirable work of discovery done by the French Catholic missionaries David, Delarey, Ducloux, Maire, and others, and of British collectors, Pratt, Henry, Wilson, Purdom, and Forrest. The paper contained a full and valuable list of all known Chinese species, with their synonyms.

A full account of what is known of the obconico-Listeri section forms one of the most interesting parts of the paper. At one extreme stands P. obconica, and at the other P. Listeri (see Fig. 118), which is not in cultivation.

P. obconica was collected by Maries in 1879, and was introduced by Messrs. James Veitch and Sons in 1882. Although it has improved in many respects, it possesses a bar to popularity in the hairs on the vegetative parts, which are apt to set up irritation of the skin of those who handle the plant. Of the forms which lie between P. obconica and P. Listeri Prof. Balfour drew particular attention to P. sinolistori, which, it is important to note, does not possess the irritant hairs characteristic of P. obconica, and is a plant of much horticultural promise.

The distribution and cultural behaviour of P. sinensis and P. obconica present an interesting problem: the former species, of restricted geographical range and non-varying habit, varies enormously in cultivation; the latter of wide range and versatility has up till the present time shown far less variation in cultivation.

The Discussion.

Mr. H. J. Elwes, of Colesborne, said that Prof. Bayley Balfour's lecture would rank amongst the very best that had been heard in that room. With respect to the cultivation of many of the fascinating new Primulas which were dealt with, he applauded the lecturer's intimation that a grant of £3,000 had been made to the Royal Botanic Gardens at Edinburgh for the purpose of building a large, cool house, with an indoor rockery, for the cultivation of these and other valuable plants, which are impatient of the alternating periods of heat and cold which so often characterise our English winters. He thought that the possibility of obviating this difficulty should receive every consideration, and suggested the desirability of adopting some method of refrigeration or retardation in this new alpine house, so as to keep it sufficiently cool to ensure the plants receiving their needed long period of rest. Prof. Bayley Balfour's remarks that the proneness of many of these Primulas to "damp off" at the collar, and his suggested remedy of applying water from below were well worth considering, but at the same time it must not be overlooked that most of the plants growing in the climate of the higher Alps grew in a bath of moisture, so that it seemed to him to be only during the resting period that there should be any danger of this decay through atmospheric moisture. The value of a knowledge of the altitude at which a plant was found seemed to him to be exaggerated.

In reply Prof. Balfour agreed with Mr. Elwes in that the data concerning altitude alone was of little value, and urged that it is necessary to know much more—the kind of place, the surroundings, and conditions under which the plant grows naturally are of infinitely more value to the cultivator. He added that it is such painstaking collectors as Mr. Forrest, who furnished these particulars, whose finds are of the greatest importance and value.

NOTES ON HIMALAYAN PRIMULAS.

By W. G. Craib, M.A.

April 16.—Just over a year after Sir George Watt delivered his paper on Indian Primulas there appeared in Engler's *Pflanzenreich* a monograph of the family Primulaceae by Pax and Knuth.

The object of the present paper is to give an indication of the work done since Sir George Watt's contribution.

In the section Sinenses there are enumerated six Indian species: P. filipes, P. Listeri, P. mollis, P. geraniifolia, and P. vaginata from the East Himalaya, and P. Clarkei from Kashmir—all of which are included in Watt's section Petiolaris. The Eastern plants, with the probable exception of P. Listeri, would appear to be rather local and rare. P. filipes is still represented by the unique type-sheet only, and P. mollis, though well known in cultivation, had not been collected since Booth's time until 1905, when J. C. White, then Political Officer in Sikkim, found it in the Bhutan highlands. Comparatively recently, P. obconica—or it may be a species very closely allied to it—has been found in Upper Burma, this being the first record of its occurring in India.

The section Floribundae, Pax, includes the same two Indian species as Watt's section Floribunda: P. floribunda and P. Lacei.

In the section Petiolares, Pax—which is used in a much more restricted sense than Watt's section of the same name—there are included four Indian species: P. petiolaris, P. Edgeworthii, P. Hookeri, and P. Tanneri. Since these revisions the variety pulverulenta has been brought into cultivation and is known as a distinct species under the name P. Winteri. This plant has been exhibited several times at the Royal Horticultural Society's meetings, and is so well known in horticultural circles that it is necessary here to point out only that P. Winteri is synonymous with P. petiolaris var. pulverulenta, Hook. f. In the writer's opinion P. Edgeworthii and P. Winteri are quite good, valid species, and should not be regarded as varieties of P. petiolaris.

The section Soldanelloideae, Pax, corresponds with the section Soldanelloides, Watt, with the addition of P. pusilla and P. sappharina, which Watt placed in his section Denticulata. In addition to the two mentioned it includes P. Wattii, P. Reidii, P. uniflora and P. soldanelloides.

So far as the Indian species are concerned Pax's section Farinosae corresponds to the section Rosea, Watt, except that Pax refers P. hazarica to the Callianthеae. To this section also belongs a new species collected during the Thibet Frontier Commission expedition which the writer would name P. Walshii in compliment to the collector. In habit the plant is very similar to P. pumilio, Maxim., from Kansu, but it is readily distinguished by the abundance of glandular hairs.

The section Capitatae, Pax, which includes several well-marked types, contains five species which Watt referred to his section Denticulata—namely, P. erosa, P. denticulata, P. glabra, P. bellidifolia, P. capitata, and two new species described by Pax: P. Schlagintweitiana and P. glomerata.

Three Indian species—namely, P. Heydei, P. minutissima, and P. reptans—form the section Minutissimae, Pax. Of these, the only plant calling for special notice here is P. minutissima var. spathulata, Hook. f., which the writer regards as a distinct species.

Of the seven species comprising the section Tenellae, Pax, there are four East Himalayan: P. tenella, P. muscoides, P. tenuiloba, and P. Stirtoniana. Pax's treatment of these differs only in the raising of P. muscoides var. tenuiloba to specific rank.

The Nivales include four Indian species: P. sikkimensis, P. Stuartii, P. elongata, and P. nivalis. The first-named is, so far as the writer has seen, confined to the East Himalaya.

Among the Callianthae, which is probably the least natural of Pax's sections, are enumerated eight species from India: P. Dickieana, P. Pantlingii, P. Jaffreyana, P. hazarica, P. Inayatii, P. Griffithi, P. Kingii, and P. obtusifolia.

The constituents of the Cordifoliae are P. reticulata, P. Gambeliana, P. pulchra, and P. cordifolia.

In the section Cankrienia there is enumerated but one Indian species—P. prolifera—whose distribution is given as East Himalaya and Assam. The Assam plant agrees well with Wallich's original description, but the Chumbi plant, although undoubtedly closely allied, is quite distinct, the best distinguishing points being found in the presence of farina and in the shape of the calyx lobes. This Chumbi plant I propose to call P. Smithiana in compliment to Mr. W. W. Smith, M.A., Assistant Keeper of the Royal Botanic Gardens, Edinburgh.

Another Bhutan Primula yet remains for which the writer can find no satisfactory position among Pax's sections: P. Jonarduni, W. W. Smith. A small tufted perennial plant with small densely imbricate and markedly coriaceous leaves which are farinose below, it represents a type not found before in India.

PRIMULAS IN THE GARDEN.

Primulas from a garden point of view were dealt with by Gertrude Jekyll, V.M.H., who described the main uses of our garden Primroses. Miss Jekyll stated that they fall into three groups, namely, those for borders, those for the rock-garden, and those for boggy ground. The border kinds alone need a further sub-division, suggesting distinct ways of use, for there are what we call the true Primroses, namely, those that are all on single stalks; there are the Polyanthus or bunch Primroses; the old florists' Polyanthus, the double Primroses, and the border Auriculas. They all agree in preferring a soil of light loamy character with some leaf-mould, and a place where they are never dried up, and where they can have either slight shade or at least a non-sunny exposure.

The native Primrose of our woods, one of the most charming of flowers, is no doubt the original of the coloured Primroses. If one might have a perfect place for them it would be a partial clearing in just such a region as the natural haunts of the wild plant—a wood of Oaks with an undergrowth of Hazel, such as occurs in nearly every farm and private property throughout the land, and not infrequently adjoins the garden. A path slightly depressed, leaving

irregular, shallow banks on either side and passing through the wood in easy sweeping lines, would provide the best possible way of growing and enjoying the Primroses; for though they are also indispensable in the actual garden, they are rather more rightly placed in the setting of woodland. It will be all the better if the plants of the main sub-divisions are kept quite distinct, either by following one another along the length of the path or by having a separate little path for each kind. This is the more desirable because the varieties are so easily mixed by chance pollination by bees. Indeed, where the Giant Cowslips are grown their influence is so strong that they must be kept quite away from the bunch Primroses, and can hardly be admitted in the same garden.

In these days, when good hardy flowers are so much prized and so well used, it is difficult to account for the general neglect of the fine old double Primroses. They should be in every garden, except those on light soils, for in these they do not flourish. In any soil of a loamy nature the double lilac, white and pale yellow varieties will grow freely, and are among the best of spring flowers.

Following the true Primrose in time of blooming are the large bunch Primroses, and of these, though there are also fine things among the pink and red colourings, the best for garden effect are the whites and yellows.

Border Auriculas enjoy a rather stiffer soil, and especially one that contains chalk. They are derived from natives of the Alps, and are in beautiful ranges of colouring of purple, crimson and yellow. The border varieties are commonly called Alpine Auriculas to distinguish them from the show kinds, though the name is ambiguous and even misleading, as there are several Primula species of the Auricula class, natives of the Alps, that are grown in rock-gardens. The most showy and easily grown of the border Auriculas are some very large forms having yellow and brown-bronze flowers with a white eye that have been raised in Scotland.

The second group of Primulas for popular use—namely, those best suited for rock-gardens—will partly overlap the first, for all the border Auriculas will be in place in the lower rocky regions, while the best of the true Alpine species, with their white varieties and a number of natural hybrids, will find places in other cool rocky clefts and hollows. The prettiest of these will be among Primula Allionii, P. glutinosa, P. hirsuta, P. integrifolia, P. marginata, P. minima and P. viscosa; the planter bearing in mind that some of these belong to the calcareous and some to the granitic regions. Thus P. Auricula, P. integrifolia and P. minima will be thankful for lime in any form, and, for preference, limestone rock; while P. hirsuta, P. marginata, P. glutinosa and P. viscosa will flourish in sandy peat with granitic rock or sandstone.

The Primulas that, from the garden point of view, it is convenient to put in the third division are those that may be regarded as bog plants. These will include the pretty little P. farinosa of our own northern moors and of Alpine marshland, three Himalayan species, and one from Japan. The Himalayan are P. involucrata, a beautiful little Primula, quite easy to grow and strangely neglected; the early-blooming P. rosea, with buds of brilliant crimson followed by the full bloom of rosy pink, and P. sikkimensis. This, when well grown in a fairly large mass rising from black boggy ground, and seen in shade, is a wonderful picture of plant-beauty; the full heads of hanging sulphur bells having that curiously luminous quality that is only observed in this and one or two other flowers of this rare colouring. Lastly, of the well-known bog Primulas there is P. japonica. The type colour is a rather rank magenta red, of a quality that does not please a critical colour-eye, but there is a good white variety and many intermediate shades of pleasing pink.

EUROPEAN PRIMULAS.

After dealing with the chief characteristics of the European Primulas, Dr. McWatt described the conditions under which they thrive best in cultivation. These plants are all naturally hardy, and they are all more or less amenable to pot culture. At the same time, if they are to prosper and remain healthy, they demand certain physical conditions, namely, plenty of air, a moderate amount of sunshine, abundance of moisture in spring and summer. They should, however, be kept fairly dry during the winter, and, lastly, but most important, they must have ample drainage.

All the species in section Vernales should be grown in good rich soil, and though they do not object to sun they must not be parched. My experience is that plants grown in partial shade are generally the most vigorous.

In section Farinosae all the species do well in loamy soil or in a cool moist part of the moraine.

To come to the strictly alpine species, I find that Primula Auricula does well in loamy soil, while in moraine soil it keeps dwarf, which is, of course, its natural habit.

P. Palinuri does best as a pot plant kept in a cold frame. P. marginata with me thrives well anywhere, and I should look upon the gardener as a kind of curiosity who fails with it. P. carniolica I grow in pure pulverised meadow loam in a shady position, and so treated it increases quickly and flowers freely. P. viscosa flourishes in the same soil as carniolica, but prefers a much sunnier aspect. It also is easy to grow. P. spectabilis does well with me in loamy soil, in half shade. P. glaucescens, P. Wulfeniana and P. Clusiana grow profusely in loamy soil and also do well in the moraine, where, however, they do not attain to such a large size. They do well both in sun and in partial shade.

P. pedemontana, P. oenensis, P. villosa, P. cottia, P. hirsuta, P. Kitaibeliana, and P. integrifolia I also grow in loamy soil with a southern exposure. They need to be carefully watched and seem to like frequent lifting and division. P. apennina I grow in loamy soil, but it is a plant with which I have not had much success. Whether it deserves the trouble it has given me I should not like to say.

Primula tyrolensis and P. Allionii are both very saxatile plants. Primula tyrolensis does well in moraine facing west and is fairly easy, but P. Allionii is much more difficult and does best in calcareous soil in a sunless cavern. It is worth any amount of trouble, for it is a really charming flower. It is a subject well suited for pot culture in a cold frame.

Primula glutinosa and P. deorum I always grow in moraine, but with different aspects, P. glutinosa facing south and P. deorum in a half shade. But P. glutinosa suffers from home-sickness or temper, like so many beauties, and resolutely refuses to flower—coax and wheedle it as you may. P. minima does best in a moraine facing south-west.

As pot plants I grow all with the exception of P. Allionii and P. Palinuri in soil composed of two parts of loam, two parts peat, one part sand and one part leaf mould, well broken down, mixed together and allowed to lie for some considerable time before potting. They are plunged in sand, which prevents stagnant moisture remaining about their roots, a condition fatal to their well-being. Sand is also cleanly, and does not harbour slugs in the same way as clay and ashes do. The pots should be plunged in an open position in half sun, and exposed to all weathers, except during the hottest days of summer, when they are all the better for a little shade.

Firm potting is imperative, and I have the idea that the admixture of a liberal allowance of broken crocks is helpful.

Finally, to keep them in vigour I repeat they should be treated as other perennials and divided frequently. This is best done immediately after flowering, but may also be effected in early spring, when root action is commencing.

PRIMULA HYBRIDS IN NATURE.

By R. Farrer, Esq.

The author's paper, which should be read in full by all those who are interested in hybrids, dealt especially with such crosses as he has studied *in situ*. He pointed out that in Primula, crosses between species of different sections (not subsections) are of occurrence so rare and problematical that most quotations of them may almost be regarded as mythical. For instance, P. longiflora and P. farinosa will not interbreed with any of the twenty-one species belonging to the great section Auricula (longiflora × officinalis has been quoted, but is doubtful). Again, crosses between species in the same subsection are extremely rare, though this rarity, doubt, is only owing to every Primula's dis to sharing its district with any relative of same subsection; for where at last, very oc sionally, such invasion is tolerated, and hirs overlaps upon oenensis, glaucescens on spectab —there at once, though rarely recorded, may oc the first-cousin-born crosses, P. × Seriana a P. × Carueli. Crosses in the subsections of section Auricula are abundant, but in the s tion Farinosa, which has no subsections, farin and longiflora apparently decline to interbree for, though a cross has been cited, the occ rence is so uncertain and unique that the pl described (P. × Kraettliana Brügger) is b taken as a form of longiflora.

The two most prolific parents in the sect Auricula are undoubtedly minima and Auric itself. In Switzerland, and especially in t Engadine, its most southerly corner, Auricula finds a happy mating-ground; Switzerland, so poor in Primulas, provides two at least that are to t taste of P. Auricula. Almost universal, thou non-calcareous in its tastes, is P. hirsuta, A (1785) (the false P. viscosa of gardens a catalogues). And hence springs an endless a inextricable series of hybrids—with which I a not here to cope, as I have never yet ranged t districts occupied by Auricula and hirsuta—th is, the whole main chain, at least as far as t Vorarlberg. This cross is indefinitely fertil too, crosses backwards and forwards again, and out to the *n*th generation, steadily increa ing, also, in magnificence, till from this are ul mately developed all the Auriculas of the flor and the border, since Clusius first in 1573 sa them in the gardens of his medical friend D John Aicholtz, of Vienna, and sought them vain over the highest ranges of Austria a Styria, but understood them to be known in t Oenipontine Alps. This cross, and its furth results, are universal in Switzerland; and, se ting aside the florist, the rock gardener has ha enough work with disentangling all the confuse names of the countless "Alpine Primulas" th oscillate between hirsuta and Auricula. T proper, sole name for the whole enormous rang of them, no matter how they vary, is P. pubescens. Mr. Farrer dwelt at length on th hybrids derived from P. minima, which h characterised as the most wholesale parent of th race, and with those which own P. viscosa as parent, and concluded a brilliant paper with a account of P. integrifolia. Appended to th paper is a table setting forth our present know ledge of the known hybrids between species o Primula.

SOCIÉTÉ FRANÇAISE D'HORTICULTURE DE LONDRES.

April 19.—The twenty-fourth Anniversary Dinner of the French Gardeners' Society, Londo was held on Saturday last at the Café Roya Regent Street. The chair was taken by Mr. R Rudolph Barr, who was supported by Mr. Geo Schneider, the President. After the usual loya toasts had been given, the Chairman proposed th toast of the evening, "The Société Français d'Horticulture de Londres." Mr. Barr referre to the modest beginnings of the Society, to th good work it had accomplished, and to his hope for its future. He briefly traced the history o the Society from its earliest days until the pre sent time, stating that the membership wa now 700, and the credit balance £200. He reminded the company that the Society was not only educative, social, and international, bu also philanthropic, for it had recently contri buted £50 to English gardening charities and a like sum to the victims of the recent Paris floods The monthly meetings, the library, and othe advantages of the Association were of much value to the members, who owed a large debt to Mr. Schneider for his great interest in them.

Mr. Schneider, in reply, stated that the attendance was a record one for these dinners ninety-five being present. It was a great en couragement for him to continue his work, and he valued very greatly the sympathetic regard many English horticulturists had shown him. It was due to them that the Society had made such headway by enabling him to place many young French gardeners in situations where they could improve their knowledge of English and o

heir profession. He proposed the toast of "Sussess to English Horticulture."

Sir Albert Rollit replied, although he thought Sir Harry Veitch, who was present, ught to have been chosen before him. In the ourse of a humorous speech Sir Albert referred to the excellent work the Society had done n connection with the International Horticultural Show at Chelsea, to the commercial and ther advantages of horticulture, and the fact hat the R.H.S. was about to grant a diploma n horticulture. He added also that there was ope that the University of London may establish degree in horticulture. He drank to the health f the officers of the Society, to which M. aussy responded, saying that a large measure of heir success was due to the gardening Press.

The Chairman was thanked for the handsome ift of Narcissi that decorated the tables, and M. Ripard, also, for the floral arrangements. In he name of the young members M. Ledeux nade the presentation of a clock to Mr. Schneider, which was suitably acknowledged. The musical programme included songs in French and English.

ROYAL METEOROLOGICAL.

April 16.—The monthly meeting of this ociety was held on this date at the Surveyors' nstitution, Great George Street, Mr. C. J. P. Cave, President, in the chair.

Mr. W. H. Dines, F.R.S., read a paper on 'The Vertical Distribution of Temperature in he Atmosphere, and the work required to alter t.'' It seems likely that the vertical distribuion of temperature is the result of two opposing endencies, one the effect of radiation, and the ther the forced mixing produced by the general irculation, aided perhaps by the convection aused by the heating of the earth by solar radiaion and by the latent heat set free by condensaion.

Mr. J. E. Clark presented the "Report on he Phenological Observations for the year endng November, 1912," which he had prepared ointly with Mr. R. H. Hooker. The chief actors affecting the field crops were probably he dry, warm April and May, followed by the old, wet sunless summer. The spring was perhaps the more important of the two; it affected the corn crops and the hay. All the crops in the United Kingdom were below the average of the preceding ten years, although in Great Britain alone meadow hay was a little better than usual, and hops were also above the mean by fully 23 per cent. The harvest of 1912 must thus be classed as very deficient and one of the worst experienced for many years.

A paper on "Meteorological, Electrical and Magnetic Observations during the Solar Eclipse of April 17, 1912," prepared by Mr. R. Corless, Mr. G. Dobson, and Dr. C. Chree, F.R.S., was also read.

KENT, SURREY AND SUSSEX DAFFODIL.

The spring show of this Society was held on the 17th inst., and although there were fewer exhibits than usual in the Daffodil classes, it was a success.

Although not compelled to confine its shows to one centre, Tunbridge Wells is more accessible to exhibitors than any other town, but the Society will be well advised to change its venue from time to time, even if it curtails some entries. Numerous species, which are usually considered too tender for any situation outside Cornwall, were shown, and all from the open from one or other of the three counties. Col. Stephenson Clarke, Cuckfield, showed many rare Rhododendrons, including R. campylocarpum, R. Gibsonii, and R. Aucklandii. Sir Edmund Loder, Leonardslee, Horsham (gr. Mr. [illegible]); J. A. Nix, Esq., Crawley, and others staged superb collections of cut shrubs and early flowers.

J. A. Nix, Esq., Tilgate, Crawley, was awarded the first prize for a collection of ten varieties of Narcissi, embracing all sections; the varieties Madame de Graaff, Will Scarlet, Red Beacon, White Queen and Lord Roberts were all excellent.

For twelve varieties Miss A. L. Nix, Tunbridge Wells, was successful. In the various other classes competition was fairly keen, and among the various exhibitors Miss V. Warren, Canterbury; Mrs. Bridge, Godalming; Miss E. D. Roberts, Tunbridge Wells; Mrs. Latham, Cuckfield; W. C. Bull, Ramsgate; and C. G. A. Nix, Crawley, were prominent.

Trade exhibits were not numerous. Messrs. Barr and Sons, King Street, Covent Garden, London, and Mr. Herbert Chapman, Rye, showed collections of Daffodils; whilst Messrs. G. Reuthe, Keston; G. Bunyard and Co., Maidstone; and C. Charlton and Son, Tunbridge Wells, staged exhibits of hardy flowers.

NORWICH HORTICULTURAL.

April 17.—The Spring Show of the Norfolk and Norwich Horticultural Society was held on this date in St. Andrews and Blackfriars Halls. A very large display was made, especially of non-competitive exhibits, almost the whole of the St. Andrews Hall being filled with groups staged by nurserymen. Messrs. Hobbies, Ltd., Dereham, exhibited Roses, including the new cluster variety Danne, also flowering shrubs. Messrs. A. C. and J. Allen, Norwich, staged a collection of Roses; and Messrs. R. Wallace and Co., Colchester, arranged a rock-garden, with choice collections of suitable plants. Mr. G. W. Miller, Wisbech, showed Orchids in splendid condition, and also an attractive group of hardy plants.

In the competitive classes, Col. Petrie, Westwick, was placed first for Narcissi; Mr. G. E. White, Eaton, for Carnations and exotics; and Mr. Frank Neave, of Lingwood, for hardy flowers. In a competition for a group arranged in oblong shape, the 1st prize was awarded to Mr. E. G. Buxton (gr. T. Notley). The group, which was extremely effective, was composed of Genistas, Amaryllis, and other flowering plants, relieved with Ferns and Palms.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

The monthly meeting of the above Society was held in the R.H.S. Hall on the 14th inst., Mr. Chas. H. Curtis in the chair. Five new members were elected. Two members were allowed to withdraw the sums of £5 16s. 9d. and £5 respectively from their deposit accounts; whilst fifteen members were also allowed to withdraw double the amount of interest, amounting to £59 13s. 6d. The sick pay for the past month has amounted to £60 5s. 6d., and £23 5s. 10d. (State Section) respectively; maternity claims £12. The sum of £5 18s. 10d. standing to the credit of a thirty-years' lapsed member's account was passed for payment. Owing to a regrettable misunderstanding of not transferring a cheque of £145 11s. from the Commissioners to reimburse the ordinary side for administration expenses the annual meeting stands adjourned until May 5.

MIDLAND DAFFODIL.

April 22-23.—Owing to the Royal visit to Birmingham on April 23, when Princess Louise laid the foundation stone of the new children's hospital in Ladywood, and unveiled the memorial statue of King Edward in Victoria Square, near the centre of the city of Birmingham, the committee of the Midland Daffodil Society decided, after much consideration, to hold the show one day earlier than was originally agreed upon. The exhibition was very extensive, and, considering the very trying weather experienced of late, the general quality of the flowers was excellent, although many specimens were rather undersized. Seedlings, which are always well shown at Birmingham, were more numerous than on any previous occasion. In addition to Daffodils, miscellaneous exhibits of Roses, Carnations, Alpine plants, Tulips, etc., were shown in splendid condition. The schedule, which is a very comprehensive one, is divided into four groups, and comprises 64 classes, of which 57 are for Daffodils and seven for miscellaneous plants and cut flowers. Liberal cash prizes, together with challenge cups, vases, gold medals, plate, etc., were offered for competition. On the evening of the first day of the show Mr. Robert Sydenham entertained the exhibitors, judges, and visitors to dinner, after which a very pleasant and instructive discussion was started by the Rev. G. H. Engleheart on Daffodil culture. The weather on both days of the show was fine and warm, and the attendance of visitors very encouraging. Mr. Robert Sydenham (Treasurer), the Rev. Joseph Jacob (Chairman), and Mr. Herbert Smith (Secretary), are to be congratulated upon getting together one of the very best of the fifteen exhibitions held under the auspices of this progressive Society.

Cut Flowers (Open Classes).

The premier class was for a collection of fifty varieties representing, as far as possible, the different divisions. One vase of each variety, containing three blooms, was required —neither more nor less—and to be correctly and legibly named. Daffodil foliage only was allowed. Six splendid exhibits were placed before the judges, who experienced some difficulty in awarding the first and second prizes, so good and so evenly matched were the exhibits from the Rev. Joseph Jacob, Whitewell Rectory, Whitchurch, and Messrs. Cartwright and Goodwin, Kidderminster. The flowers of each contestant were of excellent quality and nicely arranged. The first prize was awarded to the first-named exhibitor, whose collection contained fewer large Trumpet varieties than is usually seen in this important class. A few of the best varieties were Horace, Charlotte, X. Y. Z., Cassandra, Bernardino, The Doctor, Weardale Perfection, Harmony, Florence Pearson, Olympia (white), H. C. Bowles, Red Chief, Buttercup, Sybil Forster, Steadfast, The President, Lorna Doone, Venus, Incognito, Evening Delicacy, Cleopatra, and several unnamed seedlings. In the second prize stand we noted beautiful examples of Matthew Arnold, Trojan Boy, White Star, Aida, Chloe, Jaune à Merveille, Mrs. H. J. Veitch, and Orangeman. Third, Mr. C. Bourne, Bletchley.

In a new class provided for a decorative exhibit of cut Narcissi arranged against a wall on a space of 9 feet by 4 feet, exhibitors were at liberty to use flat or tiered staging, also vases of any shape or size. There was no restriction as to the number of varieties or number of blooms employed, but the stems of all had to stand in water, wet sand, or moss. Any foliage —cut or uncut—was admissible. The first prize was awarded to Mr. C. Bourne, Bletchley, who displayed his flowers in about half a dozen or so vases, arranged at irregular levels between Ferns, Palms, and Bamboos. Second, Mr. John Pope, King's Norton, Birmingham; third, Rev. Joseph Jacob.

In a class for six varieties of yellow Trumpet Daffodils, Mr. W. A. Watts, St. Asaph, won the first prize with large, shapely flowers of Magog, Monarch, 591/11, 580/11, S. Y. T., and S. Y. T./11. In the second prize exhibit, which came from the Rev. Joseph Jacob, the varieties King Alfred, The Doctor, and Lord Roberts were particularly good.

The best exhibit of six white Trumpet Daffodils also came from Mr. W. A. Watts, whose handsome flowers of Mrs. Betteridge Benen, 257, Cyleen, Madame de Graaff, and Glaslyn were borne on very long, strong stems. Second, Mr. J. Mallender, Bawtry, who showed exquisite blooms of Sybil Forster, La Donna, and a new seedling named Io.

The leading exhibit in the next class, which was for six varieties of Trumpet (bicolor) Daffodils, three blooms of each sort, also came from Mr. W. A. Watts, who had clean, bright specimens of Adwall, Bangor, Cethin, Bloden, Arwin, and Weardale Perfection. Second, Rev. Joseph Jacob, whose best varieties were Harmony and Lane. The last two exhibitors were placed first and second respectively in the next class, which was for six varieties of Incomparabilis Daffodils, three stems of each.

In a similar class for six varieties of Incomparabilis Daffodils, but with white or whitish perianth and self-yellow or red cup, the judges were unable to decide between the Rev. Joseph Jacob and Mr. C. Bourne, who were bracketed equal first. The flowers in each stand were perfect in shape, size, and form, and beautifully fresh. Mr. W. A. Watts and Rev. Joseph Jacob were placed first and second respectively in a class for six varieties of Barrii Daffodils, possessing yellow shades, with or without red colouring on the cup. The first-named exhibitor had excellent flowers of Orestes, Torchlight, and Blood Orange. In another class like

the last-named, but with flowers having a white or whitish perianth and self-yellow, red-stained or red cup, Mr. C. Bourne excelled with Cossack, Seabird, Ethelbert, Red Eve, Bullfinch, and Queen of Hearts, the last-named being particularly good. Second, Mr. F. Herbert Chapman, Rye.

Of the four exhibits in a class for twelve varieties of Leedsii Daffodils, three blooms of each, the Rev. Joseph Jacob was placed first with handsome flowers of Hon. Mrs. Franklin, Evangeline, Endurance, and Lord Kitchener. Second, Mr. C. Bourne. The winning exhibit in a class for three varieties of Triandrus hybrids, three stems of each, came from Mr. W. A. Watts, who showed pleasing examples of Dewis, Cilyon, and 260. Second, Messrs. Cartwright and Goodwin. The last-named exhibitors were awarded the first prize for six varieties of Tazetta and Tazetta hybrid Daffodils, three blooms of each.

In the next class, which was for nine varieties of true Poeticus, three stems of each, there were five exhibitors. First, Mr. C. Bourne, who had dainty flowers of George Herbert, Homer, Virgil, Orange King, and Laurette. Second, Messrs. Cartwright and Goodwin. Third, Mr. F. H. Chapman.

There was only one entry in a class for twelve varieties of original species and natural hybrids of Daffodils. The schedule allowed these to be shown in pots, pans, boxes, or cut blooms. The collection was an interesting one, and included Triandrus albus gracilis, Queen of Spain, Maximus, Santa Maria, Moschatus of Haworth, albiscens and biflorus. The exhibitor was Mr. R. Bruce Waite, Harborne, who was awarded the second prize.

Single Bloom Classes.

(Open.)

Mr. W. Welchman exhibited the best yellow trumpet Daffodil (Commonwealth); Mr. C. Bourne had the best Barrii Daffodil (Queen of Hearts); Mrs. Ridley, Wincanton, had the best Leedsii Daffodil (Moonbeam); Mr. W. A. Watts was placed first in a class for a triandrus hybrid Daffodil in 658. The best Poeticus variety was Dulcimer, exhibited by Mr. H. G. Hawker, Ivybridge; Mr. John Pope had the best double Daffodil in Golden Rose; Mr. P. D. Williams excelled in the class for a Jonquil hybrid Daffodil, with an unnamed seedling; and Messrs. Cartwright and Goodwin had the best Tazetta or Tazetta hybrid Daffodil in Jaune à Merveille. Mr. A. M. Wilson exhibited the best flower in each of the following classes :—(*a*) White Trumpet Daffodil (White Knight), (*b*) bicolor Trumpet (P.B.F.), (*c*) Incomparabilis Daffodil (618), (*d*) Barrii Daffodil (122.E).

Seedlings and New Varieties.

There was good competition in a class for six varieties of seedling Daffodils raised by the exhibitor and not in commerce The first prize was won by Mr. A. M. Wilson, Shovell, Bridgwater, with a very handsome set of unnamed blooms; second, W. A. Watts. In the next class, for three varieties of seedling Daffodils raised by the exhibitor and not in commerce, ten very fine exhibits were displayed. First, Mr. P. D. Williams, St. Keverne; second, Messrs. Cartwright and Goodwin. The Bourne Challenge Cup (to be held for one year), together with a gold medal, is one of the most coveted trophies offered by the Midland Daffodil Society. It is offered for 12 varieties of Daffodils raised by the exhibitor, and was won by Mr. E. M. Crosfield, Cossington, Bridgwater, who had a very choice exhibit of flowers of the Poeticus and Barrii varieties. Mr. W. Welchman, Upwell, Wisbech, who was awarded the second prize, showed all Trumpet varieties.

The class for three varieties of seedling Daffodils raised by the exhibitor and not yet in commerce, was well contested. It was open only to those who have never won a first prize for seedlings (single bloom classes excepted) :—First, Mr. N. Y. Lower, Presteign; second, Mr. C. L. Adams, Wolverhampton. The Cartwright Challenge Cup was offered for 12 varieties of Daffodils that have not been in commerce more than four years, and was won by Mr. E. M. Crosfield, with exquisite flowers of Winsome, Ring Dove, Touchstone, Orb, Nobless, Dick Turpin, Flattery, Sarchedon, Dell, Cæsar, Anchorite, and Snow King; second, Messrs. Cartwright and Goodwin, whose best flowers were White Wolf, Matthew Arnold, and Diamond.

In a smaller class for six varieties of new Daffodils there were four entries :—First, Mr. C. Bourne, with splendid flowers of Miss Willmott, Black Prince, Evensong, Giraffe, Queen of Hearts, and Lemon Belle; second, Rev. Joseph Jacob, who had first-rate flowers of Whitewell, Lady Moore, and Olympia (white).

The next class was for three varieties of Daffodils that have not been in commerce more than four years. Exhibitors in the last class were ineligible to compete in this class :—First, Mr. H. G. Hawker, Ivybridge, Devon; second, Rev. T. Buncombe, Black Torrington.

The Herbert Chapman Trophy was offered for six varieties of true Poeticus Daffodils that have not been in commerce more than four years, including at least one variety not yet in commerce :—First, Mr. E. M. Crosfield, with Madrigal, Ring Dove, Nellie Price, Snow King, Sarchedon, and Cæsar; second, Mr. A. M. Wilson.

Amateur Classes.

In a class for six varieties of Daffodils (any division) that have not been in commerce more than four years, Mr. N. Y. Lower won the first prize. The largest class in the amateur section was for twenty-four varieties of Daffodils, in which Mr. E. H. Wood, Ludlow, was deservedly awarded the premier prize against seven competitors. The same exhibitor also secured first prizes in classes for (*a*) three varieties of Incomparabilis Daffodils, (*b*) six varieties of Poeticus Daffodils.

J. A. Kenrick, Esq., Harborne (gr. Mr. R. Usher) took the lead in the class for nine varieties of Trumpet Daffodils, and in another for three varieties of Tazetta and Tazetta hybrid Daffodils. The best six varieties of Leedsii Daffodils came from Mr. N. Y. Lower.

Mr. Robert Sydenham's class for a dozen varieties of cheap Daffodils made a pleasing addition to the Amateur section. First, Mr. A. Taylor, Olton; second, Mr. R. Bruce Waite, Harborne.

The daintiest arrangement of cut Daffodils on round tables was made by Mrs. J. V. Macdonald, Harborne. Second, Miss E. Deakin.

The Birmingham Botanical and Horticultural Society's medals were awarded as follows :—

Classes 3 to 28 : Silver medal won by Mr. W. A. Watts, with 92 points; bronze medal by the Rev. Joseph Jacob, with 70 points. Classes 15 to 28 and 29 to 37 : Silver medal won by Mr. W. A. Watts, with 53 points; bronze medal by E. M. Crosfield, with 52 points. Classes 15 to 28 and 38 to 49 : Silver medal won by Mr. E. H. Wood, with 81 points; bronze medal by Mr. N. Y. Lower, with 76 points.

The Barr cup was won by Mr. E. H. Wood, with 78 points.

Awards of Merit.

Narcissus Leedsii Nora Pearson, from Messrs. J. R. Pearson and Sons, Lowdham; Narcissus Leedsii Kingdom, from Mr. Walter T. Ware, Bath; Narcissus Barrii Queen of Hearts, from Mr. C. Bourne, Bletchley; Narcissus Poeticus Dulcimer, from Mr. H. G. Hawker, Ivybridge; and Narcissus Triandrus Cairngorm, from Messrs. Cartwright and Goodwin.

Honorary Exhibits.

Gold Medal.—Messrs. Barr and Sons, Covent Garden, for Daffodils.

Silver Gilt Medal.—Messrs. J. R. Pearson and Sons, Lowdham, for Daffodils; Rev. G. H. Engleheart, Dinton, for seedling Daffodils; Messrs. Sutton and Sons, Reading, for Cinerarias and vegetables; Messrs. Bakers, Wolverhampton, for rock work; Messrs. Cartwright and Goodwin, Kidderminster, for Daffodils; Robert Sydenham, Ltd., Birmingham, for Daffodils, Lilies-of-the-Valley, and Anemones; and Mr. S. Mortimer, Rowledge, Farnham, for cut Tree Carnations and Stocks.

Silver Medal.—Mr. C. Bourne, Bletchley, for Daffodils and Darwin Tulips; Messrs. Reamsbottom and Co., Geashill, for Anemones; Messrs. R. H. Bath, Wisbech, for Daffodils and Darwin Tulips; Mr. H. N. Ellison, West Bromwich, for Ferns; Mr. V. Slade, Taunton, for cut Zonal Pelargoniums; and Mrs. Backhouse, Hereford, for seedling Daffodils.

CATALOGUES RECEIVED.

Charles Turner, Slough.—Dahlias.
James Veitch & Sons, King's Road, Chelsea, London.—Dahlias, Hardy Water Lilies, and Aquatic Plants.
C. F. A. Van der Sluys, Ramée, Guernsey, Channel Islands.—Carnations.
J. Cheal & Sons, Ltd., Crawley.—Dahlias.

Foreign.

J. Chantrier, Mortefontaine (Oise), France.—New Plants.

Colonial.

C. A. Nobelius, Gembrook Nurseries, Emerald, Victoria, Australia.—Fruit Trees.

THE WEATHER.

GENERAL REMARKS.

April 23, 1913.

Weather.—Over England the week opened with fair dry weather, but a change soon spread in from the westward, and for the remainder of the period measurable quantities of precipitation were experienced daily. During the latter half of the week rain was mingled in many instances with hail or snow, and was accompanied locally by sharp thunderstorms.

Temperature was below the average, the excess varying from about 2½ in Scotland N. and E., and Ireland N., to less than 1° in England N.E. The highest readings occurred at various times in different parts of the country, but mainly between the 14th and 16th when the thermometer rose to between 56° and 58° in nearly all the English and Irish districts. In England N.W. and Scotland E. it did not exceed 54°, and in Scotland N. and W. it only reached 52°. The lowest readings were observed very generally on the 13th when sharp frost occurred over the entire eastern half of the kingdom. In England N.E. and E. the sheltered thermometer fell to 24°, in the Midland Counties to 22°, and in Scotland E. (at Balmoral) to 18°. On the surface of the grass the lowest readings reported were 12° at Kew, 13° at Raunds, 15° at Balmoral, and 16° at Birmingham. At a depth of 1 foot the mean temperature of the soil was below the average, and in England E. the deficit was considerable. At a depth of 4 feet it agreed more closely with the normal, and was, in many places, slightly above it.

Mean Temperature of the Sea was lower than in the corresponding week of last year, and was below the normal in nearly all localities, the only district with anything like a general excess being the N.E. coast of Scotland. The mean values ranged from 51.5° at Seafield and 50° at Scilly, to 42.3° at Scarborough, and 41.4° at Burnmouth.

Rainfall was in excess of the average in all districts, the difference being considerable in the west and extreme north. The individual falls were as a rule only moderate, but on the 15th amounts varying between 1.0 in. and 1.5 in. were recorded locally in Wales and some adjacent English districts, the largest measurement reported being 1.7 in. at Arlington.

Barometer and Wind.—Shortly after the commencement of this period the borders of a large cyclonic disturbance extended southwards from the Icelandic region and occasioned a shift of wind to the south and south-west over the whole of the United Kingdom. The force was at first only light or moderate, but on the night of the 15th, when a deep secondary depression skirted our extreme west coasts, a gale from the south or south-west was experienced in nearly all districts. The main disturbance remained for some days almost stationary over Iceland or its immediate neighbourhood, but between the 16th and 18th numerous small secondaries passed from west to east across the United Kingdom, and occasioned sharp squalls, accompanied in some instances by thunder, lightning and hail. Towards the close of the week the barometric minimum in the far north moved south-eastwards to Scotland, the wind veering to the northward of west on all our west and north coasts, and blowing with the force of a gale in the Irish Sea and the north of Ireland.

THE WEATHER IN WEST HERTS.

Week ending April 23.

A change to warmer weather.—The first two days of the week proved cold, but since then there has been a rapid rise in temperature, and on the last two days the highest readings in the thermometer screen were respectively 64° and 66°. Both of these temperatures are higher than any previously recorded here this year. On the first night of the week, which was the only unseasonably cold one, the exposed thermometer registered 14° of frost. The ground is at the present time of about seasonable warmth at 2 feet deep, but 3° warmer than the average at 1 foot deep. Some rain has fallen on all but one of the last thirteen days, and to the total depth of 1½ inches. Of that amount, 3½ gallons have passed through the percolation gauge on which short grass is growing, and 4 gallons through the bare soil gauge. The sun shone on an average for 5½ hours a day, which is about the usual duration for this period in April. On one day the sun was shining brightly for 10¾ hours, but on two other days less than an hour's sunshine was altogether recorded. The winds were rather high at the beginning of the week, but during the last three days light airs have alone prevailed. In the windiest hour the mean velocity amounted to 20 miles—direction west. The average amount of moisture in the air at three o'clock in the afternoon exceeded a seasonable quantity for that hour by 1 per cent. The swallow was first seen on the watercress beds at Berkhamsted on the 15th inst., or five days later than the average date for the previous 22 years. *E. M., Berkhamsted, April* 23, 1913.

MARKETS.

COVENT GARDEN, April 23.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general averages for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—Eds.]

Cut Flowers, &c.: Average Wholesale Prices.

	s.d.	s.d.
Arum (Richardias)	3 0	4 0
Azalea, per dozen bunches	4 0	—
Camellias, white, per dozen	2 0	—
Caruations, per dozen blooms, best American varieties	1 6	2 0
— smaller, per doz. bunches	12 0	15 0
— Carola (crimson), extra large	2 0	3 0
— Malmaison p. doz. blooms:		
— — pink	12 0	15 0
Daffodils, per doz. bunches:		
— Barrii	1 6	—
— Emperor	1 6	2 0
— Victoria	1 6	2 0
Eucharis, per doz.	3 0	—
Gardenias, per box of 15 and 18 blooms	2 0	3 0
Iris, Spanish, per dozen bunches:		
— white	9 0	18 0
— yellow	8 0	15 0
— blue	8 0	18 0
— mauve	9 0	18 0
— purple	8 0	15 0
Lilium auratum, per bunch	4 0	4 6
— longiflorum, per doz. long	3 0	—
— — short	2 6	—
— lancifolium alba, long	2 0	—
— — short	2 0	—
— — speciosum		
— rubrum, per doz., long	2 0	—
Lilium candidum, per bunch long	1 9	2 0
per doz. short	1 3	1 6
Lilium speciosum rubrum, short	1 0	1 3
Lily of the Valley, per dozen bunches:		
— extra special	18 0	21 0
— special	15 0	—
— ordinary	10 0	12 0
Mignonette, per doz. bunches	4 0	5 0
Orchids. Cattleya, per doz.	10 0	—
— Cypripedium	3 0	—
— Odontoglossum crispum	4 0	—
Pelargoniums, per dz. bunches:		
White	4 0	6 0
Double Scarlet	6 0	—
Roses, 12 blooms:		
— CountessDerby	—	—
— Frau Karl Druschki	2 0	3 0
— Generals	1 0	1 6
— Kaiserine	2 6	3 6
— Lady Hillingdon	2 0	2 6
— Liberty	2 0	3 0
— Marechal Niel	1 6	2 6
— Niphetos	1 6	2 0
— President Carnot	2 0	2 6
— Prince de Bulgaria	3 0	4 0
— Richmond	2 0	3 0
— Rose Queen	3 0	4 0
— Sunburst	3 0	5 0
— Sunrise	1 0	1 3
— Ward	2 0	3 0
— Mermets	2 0	3 0
Spiræa (Astilbe) japonica, per dz. bunches	8 0	—
Spiræa, per doz. bunches	6 0	8 0
— Darwins, all shades	12 0	15 0
Stephanotis, per 12 spray	2 6	3 0
Sweet Peas, per dozen bunches:		
— white	2 6	3 0
— coloured	3 0	4 0
Tulips, per dozen bunches:		
— single red	12 0	—
— white	10 0	12 0
— Darwin, all Shades	12 0	15 0
Violets, Anemone fulgens	2 6	—

Cut Foliage, &c.: Average Wholesale Prices.

	s.d.	s.d.
Adiantum Fern (Maidenhair), best, per doz. bunches	5 0	6 0
Agrostis (Fairy Grass), per doz. bunches	2 0	4 0
Asparagus plumosus, long trails, pr. ½doz.	1 6	2 0
— medium, doz. bunches	12 0	18 0
— Sprengeri	10 0	12 0
Berberis, natural, per doz. bnchs.	3 0	4 6
Carnation foliage, doz. bunches	3 0	—
Croton foliage, various, doz. bnchs.	12 0	15 0
Cycas leaves, artificial, per doz.	3 0	12 0
Eulalia japonica, per bunch	1 0	1 6
Moss, gross bunches	6 0	—
Myrtle, doz. bnchs. (English), small-leaved	6 0	—
— French	1 0	—
Smilax, per bunch of 6 trails	2 0	2 6

Guernsey Flowers: Average Wholesale Prices.

	s.d.	s.d.
Narcissus: Poeticus	1 6	—

Plants in Pots, &c.: Average Wholesale Prices.

	s.d.	s.d.
Azalea, white and coloured, per dozen pots	30 0	36 0
Aralia Sieboldii, dozen	6 0	7 0
Araucaria excelsa, per dozen	18 0	21 0
Asparagus plumosus nanus, per dozen	10 0	12 0
— Sprengeri	8 0	9 0
Aspidistra, p. dz., green	21 0	30 0
— variegated	30 0	60 0
Boronea megastigma	15 0	18 0
heterophylla	15 0	18 0
Cineraria, p. doz.	8 0	9 0
Coleus Weddellii, per dozen, 60's	6 0	12 0
— larger, each	2 6	10 0
Croton, per dozen	18 0	30 0
Cyclamens, 48's	10 0	12 0
Cyperus alternifolius, p. doz.	5 0	6 0
— laxus, per doz.	4 0	5 0
Dracæna, green per dozen	10 0	12 0
Ferns, in thumbs, per 100	8 0	12 0
— in small and large 60's	12 0	20 0
In 48's, per doz.	6 0	—
Ferns:		
— choicer sorts per doz.	8 0	12 0
— in 32's per doz.	10 0	18 0
Ficus elastica, per dozen	9 0	12 0
Genistas, per doz.	10 0	12 0
Geonoma gracilis, 60's per dozen	6 0	8 0
— larger, each	0 6	7 6
Heliotrope	7 0	8 0

Plants in Pots, &c.: Average Wholesale Prices (cont.)

	s.d.	s.d.
Hydrangeas, white	12 0	18 0
— pink	9 0	15 0
— blue	18 0	30 0
Hyacinths, white, in pots, p. doz.	8 0	9 0
Kentia Belmoreana, per dozen	5 0	42 0
— Fosteriana, 60's, per dozen	4 0	6 0
— — larger, per dozen	18 0	63 0
Latania borbonica, per dozen	12 0	30 0
Lilium lancifolium rubrum in pts., per dozen	13 0	21 0
Lilium lancifolium alba, in pots, dozen	18 0	21 0
Lilium longiflorum per dozen	18 0	30 0
Lily of the Valley	18 0	21 0
Marguerites, in 48's per doz., white	8 0	10 0
Mignonette	7 0	8 0
Pandanus Veitchii, per dozen	36 0	48 0
Pelargonium (Geranium), double scarlet, 48's	4 0	5 0
— other varieties	5 0	6 0
Phœnix rupicola, each	2 6	21 0
Spiræa japonica, per dozen pots	6 0	8 0
— pink	10 0	12 0
Stocks, all colours	8 0	10 0

French Flowers: Average Wholesale Prices.

	s.d.	s.d.
Allium, per pad	8 0	—
Lilac, White, per bunch	3 6	4 0
— mauve	5 0	—
Marguerite, yellow, per dozen bunches	1 9	2 0
Ranunculus, per doz. bunches:		
— Barbaroux	2 0	3 0
— double scarlet	8 0	9 0

Fruit: Average Wholesale Prices.

	s.d.	s.d.
Apples, English:		
— Cooking, per bushel	4 0	7 0
— FrenchRussets, box	10 6	11 6
— Canadian, brls.	16 0	25 0
— Wenatchee, p. case	7 6	10 6
— American, brls.	26 0	36 0
— American Newtown Pippin, barrel	36 0	—
— Californian Newtowns, pr. case	7 0	8 6
— Nova Scotian, per barrel	15 0	16 0
— Oregon, Newtown Pippin, per case	9 6	10 6
— Australian and Tasmanian		
— Australian case	8 0	12 0
— Tasmanian	7 0	10 0
— Aus.Coxes.cases	18 0	20 0
Bananas, bunch:		
— Doubles	8 6	11 0
— No. 1	7 0	8 0
— Extra	9 0	10 0
— Giant	12 0	14 0
— Loose, p. doz.	0 6	1 6
— Red coloured	4 6	5 6
— Jamaica, pr ton	£9	£12
— Jamaica Ordinary, per box (9 doz.)	5 0	5 6
Dates, per dozen	2 9	3 0
— Egyptian, cwt.	25 0	—
Cranberries, p. case	9 0	9 6
Green Figs	4 0	15 0
Grape Fruit, case:		
— 96's }		
— 80's }	8 0	20 0
— 64's }		
— 54's }		
— per dozen	4 0	6 0
Grapes:		
— Almeria, barrel	22 6	25 0
— Almeria, per doz. lbs.	8 6	10 0
— English:—		
Canon Hall H.	20 0	—
Muscat of Alexandria H.	12 6	20 0
Grapes, *continued*—		
— English (New), per lb.	2 6	5 0
— Belgian, New Season, p. lb.	2 0	3 0
— Cape, White, box	6 0	8 0
— Black, box	8 0	1 0
Lemons, Messina, per case	9 6	24 0
Palermo, box	10 0	—
Lychees, 1 lb box	1 6	—
Mangoes, Cape, dz.	6 0	8 0
Melons, Cape	1 0	2 0
— English, each	1 6	5 0
Nuts, Almonds, bag	52 6	—
— Brazils, cwt.	54 0	62 0
— Spanish, sack	40 0	42 6
— Barcelona, bag	35 6	36 0
— Cocoanuts, 100	18 0	23 0
— English Cobs, per lb.	0 3	0 4
— Chestnuts, bg.	14 0	26 0
— Walnuts, French, p.cwt.		
— Naples, p. cwt.	64 0	—
Oranges:		
— Tangerines (96s.) box	6 6	—
— Seville, sours, case	18 0	20 0
— Messina, bitters, case	8 0	9 6
— Jaffa, per case	8 6	9 0
— Murcia	10 0	11 6
— Denia, per case	14 6	34 6
— Palermo Blood	6 0	7 0
Peaches, English, dozen	12 0	48 0
— Cape, box	10 0	15 0
— Belgian, dozen	18 0	24 0
Pears:		
— Cape, box	4 0	6 0
— Tasmanian, case	8 0	10 0
— per bundle of 3 boxes	7 0	10 0
Pineapples, St. Michael	2 0	4 0
Plums, Cape, box	4 0	6 0
Rhubarb, doz. bndl.	1 6	2 0
— Natural, tally	8 0	10 0
Strawberries, p. lb.	2 6	5 0

Vegetables: Average Wholesale Prices.

	s.d.	s.d.
Asparagus, Giant, per bundle	7 6	10 0
— English, per bundle	2 6	3 0
— Small bundles	0 6	0 7
— Paris green	3 0	3 3
— Sprue, bundle	0 7	0 8
— Lauris	3 0	3 6
— Cavaillon	1 1	1 3
— Victoria	4 6	—
Artichokes (Globe), per dozen	2 0	—
— ground, ½ bus.	1 6	—
Batavia, per doz.	2 0	—
Beans:		
— Guernsey, lb.	0 10	1 0
— English, per lb.	0 10	1 0
— French, brd. pad	4 0	4 6
Beetroot, p. bshel.	1 0	2 0
— bags	3 0	3 6
Broccoli, bushel	1 0	1 6
— bags	1 9	2 0
— Heads, p. hmpr.	3 0	6 0
Cabbages, p. tally	4 0	—
— per doz.	1 0	1 6
— Cornish per cra e	5 6	6 6
Carrots (English) pr. doz. bun.	1 0	1 6
— French, dozen	7 0	8 0
— Round	1 —	—
— Long	— —	—
— per pad	3 0	3 6
Carrots, unwashed, per bag	2 0	2 6
— washed, bag	3 0	—
Cauliflowers, per tally	10 0	15 0
— per dozen	3 0	3 6
Celeriac:		
— French, p. doz.	4 0	4 6
Chicory, per lb.	0 3½	0 4
Cucumbers, per dozen	2 0	4 0
Endive, per dozen	1 0	1 6
— French, p. doz.	2 0	2 6
Greens, per bushel	1 0	1 6
— bags	2 0	—
Garlic ... strike	2 6	—
Horseradish, 12 bundles	10 0	12 0
Leeks, per d z.	2 0	2 6
Lettuce, Cos, per doz.	2 0	3 6
— French, Cos, per dozen	7 0	8 0
— English, Cos, per doz.	1 0	1 6
Lettuce:		
— round, p. doz	1 3	1 4
— Dutch, p. crate	2 6	3 0
Mint, per dozen bunches	6 0	8 0
Mushrooms, cultivated, per lb.	1 0	1 3
— Broilers	10	1 0
Mustard and Cress, per doz. punnets	0 10	1 0
Onions (English), per bag	3 9	4 0
— per bushel	1 6	2 0
— picklers, per ½ bushel	2 6	3 0
— (spring), per doz. bunches	3 0	—
— (Spanish), case	4 6	5 6
— Dutch, bags	3 6	—
— Egyptian, bags	6 6	—
— — cases	7 6	—
Peas, French, pad of 10 lb.	5 0	6 0
— Guernsey, p. lb.	9 0	1 0
Parsley, per doz. bunches	2 0	2 6
Parsnips, per bag	2 0	2 6
— per bushel	1 6	—
Radishes (French), per dozen	1 6	1 9
— English, p. doz.	1 0	1 9
Sage, per dozen	2 0	—
Seakale, punnets	10	1 0
— outdoor, box, 12 lb.	2 0	2 6
Spinach, p. bushel	2 0	2 9
Scotch Kale, bushl.	1 0	1 3
Tomatos, English, per lb.	0 10	1 3
— Canary, p. bdl.	16 0	18 0
Thyme, per dozen bunches	1 6	2 0
Turnips (English), per dozen bunches	1 9	2 6
— bags	3 0	—
French, long, dozen	9 0	10 0
round, dozen	8 0	9 0
— unwashed, bag	2 0	2 6
Watercress:		
— dozen	0 4	0 6

Remarks.—The last consignment of Nova Scotian Apples in barrels arrived this week. All the consignments of Californian Newtowns are cleared. Australian and Tasmanian shipments to hand this week, per s.s. Afric and Medina, consisted of about 78,000 cases of Apples and Pears. Consignments of Fruits to hand this week from the Cape, per s.s. Kenilworth Castle amounted to about 11,000 packages, consisting of Black and White Grapes, Pears and Plums, English Hothouse Grapes of the varieties Black Hamburgh and Muscat of Alexandria are available. Fruits received from the Channel Islands include Figs, Grapes, and Melons. Forced Strawberries are a very fluctuating supply; this week the numbers exceeded the demand. English and Belgian Peaches are obtainable. English, Teneriffe and Channel Island Tomatos have been a fairly good supply during the past week. Mushrooms are more plentiful. Forced Vegetables include Asparagus, Marrows, Cucumbers, Beans and Peas. Some very fine samples of natural-grown Seakale are reaching the market in punnets and half sieves. Supplies of ordinary vegetables are sufficient for the demand.—*E. H. Rides, Covent Garden, April 23, 1913.*

Potatos.

	s.d.	s.d.		s.d.	s.d.
Blackland, per cwt.	3 9	4 0	Belgian, per bag	4 0	5 0
Evergood ,,	4 0	4 3	German ,,	4 0	5 0
King Edward ,,	4 6	5 3	Dunbar ,,	5 6	6 9
Dutch, per bag	3 6	4 0	Scotch (grey soil) ,,	4 6	5 3

Remarks.—Trade is not quite so good now that the weather is milder. Very few Potatos are arriving from home growers, but there are very large consignments from the Continent. Prices are about the same as those of last week.—*Edward J. Newborn, Covent Garden and St. Pancras, April 23, 1913.*

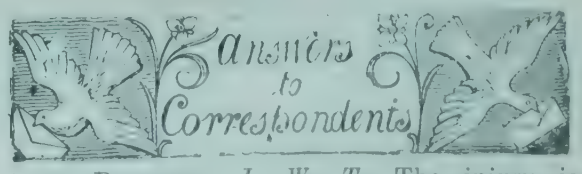
GARDENING APPOINTMENTS.

[*Correspondents are requested to* **write the names of persons and places as legibly as possible.** *No charge is made for these announcements, but if a small contribution is sent, to be placed in our collecting Box for the Gardeners' Orphan Fund, it will be thankfully received, and an acknowledgment made in these columns.*]

Mr. Alexander Macdonald, for the past 18 months Gardener to the Rt. Hon. Lord Clinton, Stevenstone, Devonshire, as Gardener to Mrs. J. B. Wood, Henley Hall, Ludlow, South Shropshire.

Mr. W. Green, for the past two years and nine months Foreman at Apethorpe Hall, Wansford, Northamptonshire, as Gardener to G. C. W. Fitzwilliam, Esq., Melton Park, Peterborough.

Mr. J. R. Cooper, for the past 2 years Gardener to A. Bednell, Esq., The Firs, Stoke Park, Coventry, and previously for 6 years at The Cottage, Coundon, near Coventry, as Gardener to W. Jackson, Esq., The Limes, Barlaston, near Stoke-on-Trent, Staffordshire.



Abies Diseased: *J. W. T.* The injury is caused by Aphis abietina, which has been so prevalent this season that numerous trees in various parts of the country have been killed outright. Spray three times at intervals of four days with a solution of soft soap and quassia chips, and repeat the spraying in September.

Ants: *H. F.* There are several means of destroying ants, such as pouring boiling water over the holes and on the nests; injecting a little Vaporite, or using "Ballikinrain Ant Destroyer." This last-named is very effective but is highly poisonous, and should be handled with great care.

ARTIFICIAL MANURES FOR PERENNIALS: *I. S. H. E.* For present use to be applied as a top-dressing to a border of established perennials a mixture of sulphate of ammonia (2 lbs.) and superphosphate (5 lbs.) per square yard will give good results. If the border is greatly impoverished it would be well to apply a second dressing of one half of these quantities at midsummer. As it will not be convenient to lift the plants and trench the border, we would advise you to fork in a mixture of bone meal (8 lbs.), basic slag (6 lbs.) and sulphate of potash (1 lb.) per square rod next autumn.

BEANS UNHEALTHY: *F. M.* There is no disease present on the plants. The spots on the pods are due to uncongenial conditions.

"BLANKET" WEED: *J. H. J.* The Blanket weed, Conferva, may be destroyed by sulphate of copper. One pound of this substance coarsely crushed should be placed in a loosely-woven sack fixed to a boat and dragged about the lake until dissolved. After an interval of a week no injury would result from cattle drinking the water.

BROAD BEANS: *Redman.* The best preventive against black fly on Broad Beans is to syringe the plants frequently with a fairly strong solution of soft soap. As soon as possible remove the points of the growths.

CARNATIONS UNHEALTHY: *W. B.* The plants are not diseased. The leaves have been injured by the spraying solution, which has collected in drops where the leaves were curved or twisted.

COBÆA SCANDENS: *H. J. H.* The cause of the seedlings dying is probably "damping off" disease. Send specimens for examination. In the meantime keep the plants drier, and afford more ventilation.

CORRECTION. Owing to a printer's error, in the review of *Commercial Gardening* (p. 248), "scab" in the sentence "it is not clear what possible effect hoeing can have upon scab," has been printed "soil."

DOUBLE FLOWERS: *M. B.* The latest information known about double flowers is given in the issue for April 19, p. 252. The green colour in leaves is due to the presence of chlorophyll, green granules of a somewhat flattened ellipsoidal shape, which occur in great numbers in the cytoplasm of the cells. You will find particulars of the function of chlorophyll in any text-book on botany.

FERTILISING VALUE OF DESTRUCTOR REFUSE: *B. D.* The value of the residue from a town destructor is of necessity an unknown quantity. What is left in the destructor is largely, if not solely, mineral matter, and although it may contain potash and phosphorus, these would probably not be in sufficient quantity to repay for the trouble of grinding the cakes into powder. Before taking further steps you would be well advised to have a small quantity of the residue analysed, and to arrive at its true value samples should be taken at different times of the year, as it is quite probable that the nature of the refuse varies greatly. The manurial property of the refuse from the slaughter-houses and the fish shops is largely destroyed during the process of burning, but if you could arrange to obtain these substances direct from the yards and shops they would have a considerable value.

FUMIGATING WITH CYANIDE: *W. E. S.* The young fronds of Adiantum Ferns (Maidenhair) will be safe from injury provided precautions are taken to keep the house dry and the temperature not higher than 50° to 55° Fahr.; but even then the fumigation must not be excessive. Sodium cyanide equivalent in strength to 130 per cent. potassium cyanide is best for the purpose. A simple method is to employ Harris's Patent Cyanide Packages, as you will only require an enamelled bowl besides. The quantity required to kill mealy bug and red spider is 2 ounces to each 1,000 cubic feet contents of the house, but this strength would be liable to injure young fronds of Maidenhair.

HORTICULTURAL COLLEGES FOR WOMEN: *C. W.* and *Miss E. H.* The following is a list of the principal horticultural colleges for women: The Horticultural College, Swanley, Kent; University College, Reading; Edinburgh School of Gardening for Women, Corstorphine; Royal Botanic Gardens, Glasnevin, Dublin; Studley Agricultural and Horticultural College for Women, Studley Castle, Warwickshire; School for Lady Gardeners, Glynde, near Lewes; Women's International Agricultural Club, Manor House, Bredons Norton, near Tewkesbury, Worcester; Country and Colonial Training School for Ladies, Arlesey House, near Hitchin; Home and Colonial School for Ladies, Lane House, Brandesburton, Hull; and School of Gardening, Parsonage place, Udimore, Rye.

MOSS ON BOWLING GREEN: *R. N. L.* The best way to get rid of moss on lawns is to first afford efficient drainage, and afterwards enrich the soil. The moss should be eradicated by scarifying the surface with an iron-toothed rake in order to detach it, afterwards raking it off. When this has been done, top-dress the lawn with a rich compost of good soil, decayed manure and wood ashes. Use two parts of soil and one part each of the other ingredients, passing them through a fine screen, and applying them at the rate of one cartload to every forty square rods. Should the soil be of a dry nature, add 7 lbs. of bone-meal to each square rod. If moist, use a similar amount of basic slag. In spring apply ½ lb. of nitrate of soda to each square rod in the case of dry soils, and a similar quantity of sulphate of ammonia in that of a moist one. These dressings should be repeated every three years. Where the grass is very thin, sow a mixture of grass and clover seeds at once. October and November are suitable months to apply the top-dressings.

NAMES OF PLANTS: *W. E. B.* Both flowers are Dendrobium nobile; the darker one is a specially good variety of the D. nobile nobilius section.—*T. T.* 1, Ornithogalum nutans; 2, Pulmonaria saccharata; 3, Muscari comosum; 4, Milla uniflora; 5, Eupatorium gracile; 6, Eupatorium Weinmannianum.—*H. D.* Amelanchier canadensis.—*A. R.* 1, Sophronitis cernua; 2, Brassia caudata; 3, Oncidium cheirophorum; 4, Calanthe rosea; 5, Odontoglossum cirrhosum.—*W. H.* 1, Dendrobium densiflorum; 2, Mesembryanthemum roseum; 3, Cassine fulvida.—*F. H.* 1, Dendrobium moniliforme; 2, D. luteolum; 3, Aërides odoratum; 4, Masdevallia caudata.—*E. P. D.* Pittosporum undulatum, a native of Australia.—*Rook.* 1, Retinospora ericoides; 2, R. plumosa; 3, R. plumosa aurea; 4, Spiræa Thunbergi; 5, Specimen too poor for identification.

PEACH LEAVES: *A. E.* The Peach trees are attacked by the Shot-hole fungus (Cercospora circumscissa). Spray with the ammoniacal solution of copper carbonate, just as the leaves are expanding, and repeat the operation at intervals.

PEACH TREES: *J. H.* and *S. J.* The leaves are attacked by the Silver-leaf disease. This disease is caused by the fungus Stereum purpureum, but no certain method of combating it has been discovered. Stereum purpureum gains access to the plant through an injury to the superficial tissues, such injury being sometimes caused by cold winds. It has been claimed by New Zealand growers that sulphate of iron will check the disease. The spores of the fungus are developed on dead branches, therefore a vigilant watch should be kept on diseased trees, and their dead branches should be removed and burned without delay.

PLAGUE OF FIELD MICE: *H. W., Leicester.* A local chemist would supply you with poison that will destroy the pests. In similar cases it has been found that three or four well-fed cats have cleared the mice, but the cats must be fed regularly with milk. We note that ordinary traps have been of no avail, but have you tried the old figure 4 trap baited with toasted cheese?

PYRUS JAPONICA NOT FLOWERING: *H. F.* The small branch received was that of a Pyrus japonica, but it was not of sufficient size to indicate the cause of the shrub not flowering. When planted out with a rich root-run, such plants grow over-luxuriantly for a time, and consequently do not flower until they are from 12 to 15 years old, or perhaps still older. On the other hand, if the soil is poor and, as perhaps is in your case, at the foot of a south wall, where it is very dry for the greater part of the year, the plant would not be strong enough to flower. When once they commence to bloom, established specimens usually continue to do so freely. To induce this condition the branches should be trained at least one foot apart, and the laterals summer-pruned, as with fruit trees. The soil should be made quite firm.

RHODODENDRON INJURED: *H. J. S.* The leaves submitted for examination have been injured by an insect of some kind, and in all probability by the larva of a lepidopterous insect, possibly by weevils. As the injury was caused during last season you should examine the leaves about midsummer, when possibly you will be able to discover the pest.

RHUBARB: *W. H.* We have compared the stem with several varieties, but cannot match it. It most resembles the variety Sutton.

ROSE LEAVES: *R. J. R.* The disease is known as Black Spot, and is caused by the fungus Actinonema rosæ. Spray the plants with liver of sulphur—1 ounce in 3 gallons of water.

SHADING GLASS-HOUSES: *E. R.* Directions for shading glass-houses were given in the Orchard Calendar for April 12, p. 234. There are also numerous preparations on the market, including "Summer Cloud," which affords a good and permanent shade, and "Pingo," a green shading.

THRIPS ON VINES: *W. B.* It is not safe to fumigate vines while the berries are small and tender; the fumigation should have been done before the flowers expanded. You must wait until a month has elapsed from the time flowering commenced, and repeat the operation after an interval of two days. The nicotine preparation you mention is suitable for the purpose.

TOMATOS DISEASED: *G. W.* The base of the stem is destroyed by a fungus—Thielavia basicola. There is no cure for affected plants. The soil used should be sterilised by heat, e.g. by steaming.

TOP-DRESSING ROCK GARDENS: *A. Wall.* It depends on the nature of the plants whether limestone or granite chippings should be used for top-dressing. A good mixture for general use may consist of one-third granite chippings, one-third fine leaf-mould and one-third sandy loam. Androsaces and other plants of a like character should receive a greater quantity of the granite chippings. For Saxifragas of the crusted and Kabschia sections lime chippings may be substituted for the granite. Before applying the top-dressing fork the surface of the soil lightly. In the case of old tufted plants work the mixture well in between the stems.

VINES LEAVES UNSATISFACTORY: *E. C. P.* The injured Pelargonium leaves and your statement that the vine in question is at the warmer end of the house afford a clue as to the cause of the trouble. There is no vine disease which can be transmitted to a Pelargonium; moreover, no disease is apparent. But noxious fumes might act on both plants in a similar manner. It is quite possible that sulphur fumes enter the house alongside of the hot-water pipes. A very small aperture—even a tiny crack—would be sufficient for this. The other vine being further away and more robust would not be so likely to be injured. February is too early to start vines unless they are specially prepared for forcing and in a vigorous condition. The vinery must have been kept too warm during winter to cause the plants to start thus early. Vine roots should not be allowed to become quite dry, even when the plants are dormant, and the sheet of corrugated iron would be likely to do more harm than good, especially if it rested on the soil and excluded the air.

Communications Received.—F. M. (thanks for 1s. for R.G.O F. box).—H. T.—F. R.—J. M.—A. J. C.—H. B.—H. B., Woburn—Mrs. C. R.—W. H., South Wales—Miss P.—E. K.—Darwin, Redhill—J. B., Falfield—H. A.—R. H. T.—C. B.—Jume—Buchlynie—Marlow—Foreman—F. W. S.—J. E. B.—A. B.—R. J. W.—H. J. W.—E. H. J.—W. E. B.—J. F. Mc.

THE
Gardeners' Chronicle
No. 1,375.—SATURDAY, May 3, 1913.

CONTENTS.

Bacterial disease of fruit blossom and foliage, a 287
Begonia, a new... ... 293
Belgian gardeners ... 293
Bequests by a nurseryman 293
Books, notices of—
Crops and Methods for Soil Improvement... 282
Botanists, vandalistic... 287
Cultural memoranda—
Watering 285
Foreign correspondence—
Injury to fruit crops in Germany and Austria 285
The Red Sunflower ... 285
Forestry—
Willows for basket-making 286
Ghent International Exhibition ... 290, 294
Grape thinning 281
Kentia seed industry ... 293
Lime-sulphur and Bordeaux useless for spraying Potatos ... 293
ew York International Exhibition, successes at the 293
Orchid notes and gleanings—
Odontoglossum Pescatorei "Lady Holford"... 283
Orchids at the Dell, Englefield Green ... 283
Orphan Fund, Royal Gardeners' 293
Pests, scheduled—
The Potato Moth ... 284
Plants, new or noteworthy—
New Genera of Stilt Palms from Colombia 282
Poetry and Plants ... 293
Potatos, scarcity of ... 293
Prunus subhirtella ... 285
Societies—
Ghent Horticultural 290, 294
Royal Horticultural 299
Soil, sterilising... ... 287
Spruce, Aphis on ... 287
Stilton Cheese, microflora of 293
Week's work, the—
Flower garden, the ... 289
French garden, the... 289
Fruits under glass ... 288
Kitchen garden, the... 289
Orchid houses, the ... 288
Plants under glass ... 288
Public parks and gardens 289

ILLUSTRATIONS.

Callier, M. Alexis, portrait of 290
De Cock, M. Lucien, portrait of 290
Eriobotrya japonica variegata 293
Ghent Exhibition, views of the 291
Trevesia Sanderi... 295
Odontoglossum Pescatorei "Lady Holford" 283
Pæony La Lorraine 296
Potato Moth, the 284
Prunus subhirtella 285
Socratea Forgetiana 286
Trevesia Sanderi at the Ghent Exhibition 295

GRAPE THINNING.

THE operation of thinning grapes must not be delayed for a day. The tenth day after the first flower opens is the time to commence with Black Hamburgh, and there is then only about sixteen days before the hardening of the seed commences. I have observed it on the 27th day after the first flower shed its cap, and the hardening of the centre of the berry stem was observed two days earlier than this. We know from the behaviour of the vines at stoning time that this period is a trying one, for not only do the berries refuse to swell, but the vines, unless they are extraordinarily vigorous, almost cease to extend. Up to this time, too, if the vines have had all their requirements satisfied, there have been on the stems and leaf ribs globules of extravasated sap, now there is no surplus to be got rid of and these globules dry up without being renewed. It is plain, then, that before this period arrives there should be no more fruit left than is destined to remain. We know that many growers will say that the bunches should be left till you see which are the best, and then leave them till you see which set the best. This very act of leaving prevents development and fertilisation, because the strain is so much greater, and if you wait for the "survival of the fittest" you will find many of the survivors are in very awkward places, and the house will not be regularly furnished throughout. A bunch which looks very insignificant when it first shows itself will, if the vine is not overtaxed and is well nourished, turn out to be a good sized one, and as for fertilisation, I never have any difficulty with that—except when the weather changes suddenly. We may have a bright day or two when the first flowers open, and they set immediately and start swelling, then dull, cold weather follows, and the remainder of the flowers are slow in opening, for no amount of firing will make up for the absence of the sun. The berries from the early set flowers then take the lead with more than their share of nourishment, and the later ones are partially starved. This is especially the case with Muscats, otherwise I find they set as freely as Hamburghs. If there are only a few of these early berries, and they can be removed without spoiling the bunches, I do not hesitate to remove them as soon as they are detected, otherwise there will never be uniformity in size, while some of the starvelings may ultimately shank, and other flowers may miss fertilisation altogether. Well-cultivated vines will generally show two, and perhaps three, bunches on each lateral, and there is nothing gained by leaving more than one of these now—the one nearest the main rod is to be preferred—and the number can be reduced a little later, according to the size to which the bunches are likely to attain, which has to be judged by former experience.

If they are likely to be three pounds in weight, then one on every other lateral will be a sufficient crop; if the average weight is expected to be only one pound, and the vines finished off former crops satisfactorily, then one bunch may be left on every lateral. All stopping of the shoots should be accomplished when they are not more than six or seven inches long, the strong ones first; and although you cannot count the number of leaves at this stage, because they are not yet unfolded, you may be certain that if only the merest speck is removed from the point with the finger nail there will be four leaves beyond the bunch. It is scarcely possible to have the fruit thoroughly finished in every way without this number of leaves beyond it, and this will necessitate the rods being four feet apart, or some of the leaves will not obtain sufficient light, and without that sufficiency they will do more harm than good. Growers for market do not give as much room as this, but they make no pretension to have perfect fruit. What are called sublaterals, i.e., shoots springing from the axils of the laterals, should all be removed excepting the one nearest the main rod, which should be kept pinched to one leaf, and all tendrils should be picked off.

In vineries where the supporting wires are badly arranged—and most of them are—tying down will also need attention at this time, or the shoots will press up against the glass. This tying down is a difficult operation, and should not be necessary while the shoots are so young; neither is it necessary when the arrangement of the wires is correct. They should never be more than two feet from the glass at any point, and then little or no tying will be necessary till thinning is completed. The best way is to have the wires run parallel with the vine rods, one for the main rod and one on each side is all that is required if they are arranged so that they can be shifted a few inches either way, and each has a raidisseur on one end. When the vines are at this distance from the glass and not tied down thinning is much easier, for there is a chance to have one's eye on a level with the bunch, instead of having to look up to it. The shape of the bunch should be considered at the very earliest stage. Badly shaped bunches are inexcusable, and they get little favour when I have to judge them. There is frequently a single shoulder shown on a bunch of a vigorous vine, and on those of less vigour it may be a mongrel between a shoulder and a tendril. This should be removed or shortened, according to which appears better to bring about symmetry. A perfect shaped bunch is almost conical, and this is what we should aim at. It is possible, if taken in hand early, to bring a very ugly looking bunch into this shape without much loss of weight.

Black Hamburgh is generally ready for thinning first, and it is quickly followed by Madresfield Court. There is no grape which pays better for early thinning than the last named, for it frequently makes all the difference whether the berries are to be about $2\frac{1}{2}$ or $3\frac{3}{4}$ inches in circumference. It sets so very thickly that no time should be lost when one can see the berries are there. Indeed, I have often thinned the flowers before they expanded, and when it is realised that seven out of every eight will have to be cut out sooner or later, the sooner some of them are removed the better it will be for the remainder. It is not so difficult to thin the flowers as the uninitiated would imagine. At this stage the greater part of the tiny berry is covered with a cap which adds to the size and protects it from danger to some extent, and if a few berries are damaged which are left in the bunch they are easily seen and can be spared at the regular thinning. To simplify matters and enable one to get over the work quickly there is no attempt now to cut out individual flowers. You hold the scissors at right angles to the bunch and cut out all the flowers situated under the branchlets. You can thus cut off half-a-dozen or more at a time, and you need not be particular about cutting them off closely, for anything that remains of the little soft stems will soon wither up. This operation can be performed by a practical hand in a few seconds for each bunch, and it at once admits air and light, and lessens the crop

by at least one-half. And supposing the flowers are not thinned, the thinning of the berries is proceeded with in the same way, viz., cut all the berries under the branchlets first, then begin the rest from the point upwards, leaving a single berry to form the point, then 4 or 5 berries to form a tier above it, about half an inch distant, and above these again 7 or 8 berries all round this part of the bunch. The berries need not be on a level with each other, nor be equidistant exactly; the forwardest berries should be saved. If two berries nearly touch it matters not, but let the average distance for the present be about half an inch, and as the stems lengthen and the berries swell they will soon become more regular. On the top of the bunch nearly all the berries should be left at this time, only cutting out those under the branchlets, and the smaller ones from above. Three parts of the bunches grown are thinned too much on the top. Large berried varieties, of course, need more thinning than small ones, but it should be remembered that the uppermost branchlets have this advantage over the lower ones that they can move upwards, and in very large bunches they do so to the extent of some inches at the points, when pressure comes from the berries below them, and they are frequently assisted in this respect by being looped up with matting. Therefore, rather leave too many than too few on the top at the first thinning, and even on the branchlets next to the top there should be plenty left to give the necessary upward pressure. The less there is visible of the stem when the berries are fully grown the better, and on vigorous vines, by attending to these particulars, it is possible to hide nearly all of it. Do not be too particular about the appearance of the bunch at first as to regularity of the berries. Remember that every berry, if all goes on well, will be more than an inch through—those of Gros Maroc, Gros Colman, and Duke of Buccleuch are sometimes an inch and a half. We must not reckon on their attaining quite this size till we have proved that the vines with our treatment are capable of doing it, but early thinning is one of the great factors in bringing it about.

Grapes under my charge always commence colouring simultaneously with the commencement of the second swelling, and that with Hamburgs not unduly forced is about 7½ weeks from the time of the first flower expanding. They will then measure about ¾-inch in diameter, and during the colouring and a week or two afterwards they will increase to about 1⅛ in.

In a few days after the first thinning it will be necessary to go over the bunches again, and it will generally be found that the berries are closer together than we intended to leave them, and that there are many in the interior of the bunches which need cutting out. Madresfield Court should not have a single berry which cannot be partly seen from the outside when fully grown, and to insure this requires a large amount of amputation. After we have cut out all that seem likely to be hid, we find in a few days that others have shifted considerably, and there are still some to be operated on. The final operation should take place before the berries touch, as this variety is easily marked.

The thinning of Black Alicante must not be long deferred, for when this variety does well, it sets so thickly that in 18 days from the time of flowering it is difficult to thin without injury. It does not require so much thinning as Madresfield Court, for its berries are not so large as well-grown samples of that variety, and it is not so liable to crack, but as it has to be kept through the winter months, very few berries should be left in the interior. Its berry stalks are rather short, consequently it is not so accommodating in the way of filling up gaps as some others. Sometimes this variety will deceive us in the matter of fertilisation. The flowers will appear to set, and the berries will swell, ultimately attaining a diameter of ¾ in., but instead of having the normal shape, they will be globular. They will never attain the full size, and will be liable to crack when the final swelling should take place. Such berries will be found to be seedless, the result of non-fertilisation.

They can be detected by a practised eye during the first fortnight of their growth, for the perfectly fertilised berries assume their normal shape from the first, and the globular ones should be unflinchingly cut out. Frequently, the possession of this knowledge prevents some of the bunches being useless. The cause of the evil is a deficiency of phosphates or of lime, perhaps of both, and immediate action should be taken to apply the remedy.

Muscat of Alexandria should be rather sparingly thinned at first. It is liable to a peculiar disease; at least, I suppose it is a disease. I have seldom seen a house of this variety without a little of it, and I know of no prevention or remedy.

When the berries are about the size of a small pea, some of them will turn a deep green colour, it may be only an odd berry here and there, but generally it is a small branchlet having several berries on it, the stems of which turn dark in the centre. If the berries are allowed to remain, they become black and shrivel up. It does not appear to be infectious, for other berries touching these are quite unharmed. It is not often that a bunch is altogether spoiled, but it might be if thinning was completed very early, and there was nothing left to fill up the gaps. But Muscat of Alexandria has long berry stems, and the berries have a good habit of shifting themselves to fill up vacancies.

When they reach the size of a large marrowfat Pea, the danger of the malady is over. *Wm. Taylor.*

NEW OR NOTEWORTHY PLANTS.

NEW GENERA OF STILT PALMS FROM COLOMBIA.

MESSRS. O. F. COOK and C. B. Doyle describe and figure three proposed new genera of the exclusively American Iriartaceæ in Vol. XVI. of the *Contributions from the United States National Herbarium*, and give a synoptical review of this family of Palms. These Palms, the authors state, are readily distinguished in nature by the fact that the trunk does not reach the ground, but is supported by a cluster of large, stilt-like, aerial roots. They resemble the Royal Palms (Acristaceæ) in having a smooth trunk, but the foliar and floral characters are quite different. The leaves differ from those of any other primate Palm in the strong development and radial position of the veins. Cook and Doyle divide the Iriartaceæ into three tribes: Iriarteæ, Catoblasteæ, and Wettinieæ, based on characters afforded by the inflorescence and flowers. This classification appears very simple. The Iriarteæ are characterised by having the flowers of both sexes borne on the same spadix, and a single inflorescence in the axil of each leaf. In both of the other tribes the functionally male and female flowers are borne on separate inflorescences of the same plant, and the inflorescences are clustered in the axils of the leaves. The flowers and fruits of the Catoblasteæ are scattered on numerous slender branches; whereas in the Wettinieæ they are crowded on a thickened, simple or few-branched spadix. All of the new genera are based on new species. Two, Acrostigma and Catostigma, belong to the Catoblasteæ, and are, so far as is known, monotypes. The third belongs to the Wettinieæ. With the new species Wettinia magnensis, Spruce, is associated as a second species, and W. illaqueans, Spruce, is treated as conspecific. The other genera of the Iriartaceæ represented in Colombia are Catoblastus and Wettinia. All the Palms of this family or group are elegant and of small or moderate dimensions. *W. B. H.*

NOTICES OF BOOKS.

CROPPING FOR SOIL IMPROVEMENT.*

ONE of the most remarkable features of modern American life is the enormous interest that is taken in agricultural matters. It shows itself in many ways: in the endowment of great agricultural colleges and research stations, in the execution of large schemes of rural development, and not least in the constant outflow of books on agriculture.

Among the latest of these books is that by Prof. Agee on methods for improving the soil. The author holds a distinguished position at the State College Experiment Station, Pennsylvania, one of the most interesting stations in the States whether judged by its past history, the work accomplished there, the work now doing, or the beauty of its surroundings. In the volume before us Prof. Agee gives a summary of the various conclusions to which his studies have led him.

The agriculturist in the United States has a very different problem from that presented in this country. He has to deal with farmers who are newcomers and have not been on the spot for the long years which alone give the ripe experience so necessary for complete success. Consequently there is much poor farming, and defects are seen that are fairly readily capable of correction. Happily, all concerned are attacking the problem with characteristic energy and enthusiasm. The experiment stations have often the longest experience of working their land and the fullest knowledge of how it should be done; they, therefore, often get the best results. We learn in Prof. Agee's book just how this is accomplished.

In the first place the defects that are to be made good are fairly well ascertained. Large areas of land in the Eastern States suffer from lack of lime, of organic matter, and plant food, and from bad drainage. Of course, these defects are not always present, but the farmer may reasonably expect some of them. Full directions are therefore given for detecting these faults. The weeds indicating lack of lime are enumerated, so that the farmer can tell on the evidence of the plant what the soil is like in this respect. There is also a good account of drainage. Stress is laid on the fact that land will carry larger crops after it has been limed and drained than before; it must, therefore, receive adequate dressings of manure. We are thus led to a consideration of the manures best suited to various crops and rotations, and to the way in which they should be purchased. Further, a full discussion is given of the relative values of the crops, so that the farmer shall know what sort of results he may expect and how he may obtain the full value from his land. In particular the advantages of temporary grasses and clovers in the rotation are strongly insisted upon: they increase the stock of organic matter and also of nitrogen, they improve the texture of the soil, and they furnish valuable keep for animals. Indeed, they play a very large part in all schemes for raising soil fertility.

Like other American books on agriculture this volume is profusely illustrated. It is well written and simple in style, and may be heartily commended to all who wish to know something of the farming of our Western cousins or who wish to stir up our own farmers to greater activity in adopting new improvements. *E. J. Russell.*

* *Crops and Methods for Soil Improvement.* By Alva Agee. Pp. xv. and 246 and plates. (Macmillan Company 1912.) 5s. 6d. net.

ORCHID NOTES AND GLEANINGS.

ORCHIDS AT THE DELL, ENGLEFIELD GREEN.

It sometimes happens that, from some cause or other, a collection of Orchids changes hands; and those who have followed its fortunes for many years feel a certain anxiety as to its future welfare under fresh ownership. Those who are acquainted with the splendid collection at The Dell need feel no fear that there will be any diminution of the care and attention bestowed upon it by the late Baron Schröder, for the present Baron, who is a keen orchidist, follows closely in the footsteps of his late uncle, to whom the famous collection owes its origin.

On his becoming possessed of The Dell, Baron Bruno Schröder gave orders for the erection of a fine new block of Orchid houses, with every modern improvement, perfect in arrangement and adaptation. The most gratifying results are being obtained under the management of Mr. J. E. Shill, and on the occasion of our visit we obtained from Baron Schröder a great deal of interesting information with regard to the various plants of both the old and the new collections.

Odontoglossums are still, as ever, the leading feature at The Dell, and all the famous forms of O. crispum are to be seen in the new houses. The taste for these forms may be said to have originated with the late Baron, with O. crispum apiatum, which was awarded a First-class Certificate at the Royal Horticultural Society's Show on April 27, 1886. The plant still flourishes; and side by side with it there is a marvellously complete collection of rare blotched forms of O. crispum. Among others we saw O. crispum Schröderianum (First-class Certificate, 1885), O. c. Sanderianum, O. c. Rex, O. c. Leonard Perfect, O. c. F. K. Sander, O. c. Pittianum, O. c. Prince of Wales, O. c. Ballantinei (1884), and O. c. Baroness Schröder. These were very familiar friends, and so were some fine forms of Odontoglossum Pescatorei—Veitchianum, Schröderianum, and Sanderæ—which are confined to this collection. Some superb novelties of the same class have lately been acquired, which will in due course make their appearance in public, notably O. c. The Dell Sunrise and O. c. Saturn.

The hybrid Odontoglossums and Odontiodas have a gratifying appearance of perfect health, with their plump pseudo-bulbs and dark green leaves. They are just now engaged in sending up stout, vigorous spikes; some are already in bloom. Several forms of O. ardentissimum (including the best Dell variety, Ebor) were noticed, and also O. mirum, The Dell variety, and O. Vuylstekei, Schröder's variety.

There is a very fine collection of species and hybrids in the intermediate range, in which albino forms are numerous. We saw the charming Lælia purpurata Schröderæ, which received a First-class Certificate at the International Exhibition last year—a white form with a fine rose, purple-tinted lip. We were also much interested in Lælio-Cattleya Baroness Emma (L.-C. eximia × C. Hardyana), awarded a First-class Certificate in June, 1912; a noble flower, not yet excelled.

There were several fine forms of L.-C. callistoglossa and L.-C. Aphrodite. Apropos of the latter, we may remark that the late Baron Schröder always obtained the best forms of the early Veitchian hybrids—many of these are even now the best, and the type-plants still exist in the collection. Some charming forms of Cattleya Schröderæ are now in bloom: the flowers of a delicate peach tint, with a deep orange-bronze disc on the lip. We found The Baron the most attractive of these. Among Calanthes, the original Baron Schröder is still the best hybrid of its class; the light form (C. Baron Schröder albiflora) is now much grown at The Dell. In every case, the best of the old collection has been retained, and nothing added which was not in every sense an acquisition. The handsome clear yellow Cattleya Helias is a very valuable addition; and so are C. Dupreana, The Dell variety (illustrated in the *Gardeners' Chronicle*, December 14, 1912), C. labiata Opal, one of the handsomest of white Cattleyas, and Brasso-Lælio-Cattleya King of Spain.

The house of Mexican Lælias was most interesting, but space forbids any description of it, beyond the mere mention of the white forms of Lælia anceps, which are thriving almost beyond belief under Mr. Shill's care. The white Lælia anceps Schröderiana and the richly tinted L. a. Schröderæ are still two of the best. All the L. anceps are grown in pots, chiefly with Osmunda fibre; they are not liberally watered, but their vigour and development are aided by frequent spraying. It is Mr. Shill's opinion that over-watering is one of the most fertile sources of failure in the case of Mexican Lælias.



Fig. 120.—ODONTOGLOSSUM PESCATOREI "LADY HOLFORD." (Reduced.)
(R.H.S. First Class Certificate on April 15, 1913.)

Miltonia vexillaria, of which there is a fine collection, grows luxuriantly, sending out spikes in the greatest profusion. M. v. Memoria G. D. Owen, which gave some trouble at first, is now well advanced, and in vigorous health; and M. v. Memoria Baron Schröder is also in good condition. Those now in bloom are the large-flowered, dark-coloured forms.

In all the houses there is evidence of activity in cross-breeding. Finely marked forms of beautiful Cattleyas, Lælias, Brasso-Cattleyas, Odontoglossums, Odontiodas, and Cymbidiums bear fine fruits, the result of crosses between the very best kinds. The bearing of seed capsules used to be considered detrimental to the health of the plants, but it is now recognised that this only applied in cases where the plant is not vigorous enough to bear the strain. We saw a mass of Cattleya Dowiana bearing three or four large fruits of different crosses, and looking perfectly healthy—the pseudo-bulbs were as plump as could be desired—and in every case we noticed the same vigorous appearance.

The chief interest of the whole collection centres in the range in three divisions which is devoted to the raising of seedling Orchids, where they remain until they approach the flowering stage. In the first division are the cases which hold the pots in which the seeds are sown—the first stage of thousands of prospective novelties of the very best parentage. So rapid is the progress made that we saw some seedlings already pricked off, which had been produced from crosses with some of the new forms shown at the International Exhibition last year. On the staging in the same division we were shown the store pots containing crosses of the most promising character. There was no sign on any of that insidious fungous growth which is so often fatal. The succeeding divisions are graded, the plants in the end division being the largest, and well on the way towards the flowering stage.

The structure between the two ranges is occupied by some of the old specimens of the collection; the offices, potting sheds, and bothies adjoin; and a short distance away is the comfortable cottage occupied by Mr. Shill.

ODONTOGLOSSUM PESCATOREI LADY HOLFORD.

Our illustration (Fig. 120) represents the beautiful form of Odontoglossum Pescatorei for which the Orchid Committee of the R.H.S. gave a First-class Certificate on April 15. In our illustration the inflorescence and the fine shape of the flower is well shown, but on a reduced scale, the flowers actually measuring 4½ inches across, as recorded by us April 19, p. 258, in the report of the Award. O. Pescatorei does not vary so much as O. crispum and [illegible]

forms are useful and pretty, the remarkable varieties are not common. This deserves to take rank with the best, including O. P. Duchess of Westminster and O. P. Sanderæ.

For decorative purposes and for cut flowers, O. Pescatorei is one of the best, as it makes free growth, and the flowers last a long time.

DESTRUCTIVE INSECTS AND PESTS

SCHEDULED BY THE BOARD OF AGRICULTURE AND FISHERIES.

IX.*—THE POTATO MOTH.

A SMALL tineid moth has of late years attracted world-wide attention, owing to the fact that it is responsible in some countries for very considerable damage to the Potato. This insect is now known as the Potato Moth (Phthorimæa operculella, Zeller), but it has in the past been given other names, such as Bryotropha solanella, Bois., Lita epithymella, Stg., Lita solanella, Bois., and Gelechia operculla, Zeller. The principal damage is done by the small caterpillars, which mine in the tubers, and thus not only cause much direct injury, but provide an admirable opportunity for the entrance of fungi. Even when the tubers are not wholly destroyed, there is much waste when they are prepared for cooking purposes.

According to Maxwell Lefroy and Evans (*Agric. Jour. of India*, V., 1, 1910), the Potato Moth has spread to India, Australia, and other countries from Italy, Algeria and the Mediterranean region generally, where it is well established. It is not regarded with special apprehension in Italy. Froggatt, however, says (*Agric. Gaz., N.S. Wales*, April, 1903) that it was recorded so long ago as 1854 in Tasmania. At the present time it is very widely distributed, and causes much loss in India, the Australian Colonies, New Zealand, South Africa, parts of the United States (particularly California), Italy and Algeria. According to Picard, it has been known for several years in the French Department of Var, in the neighbourhood of Môle. The district most affected is said to be that of Bormes, where Professor Picard found it impossible in December, 1911, to discover more than a few unaffected tubers. As we shall see below, the moth is rapidly multiplied and readily distributed, and as Potatos enter very extensively into international trade the fear has naturally been expressed that it may reach Great Britain. Indeed, Froggatt says (1903) that it can be "so easily transported from place to place in seed potatos, old bags, and packing that it is only a question of time when it will have probably followed the potato all over the world."

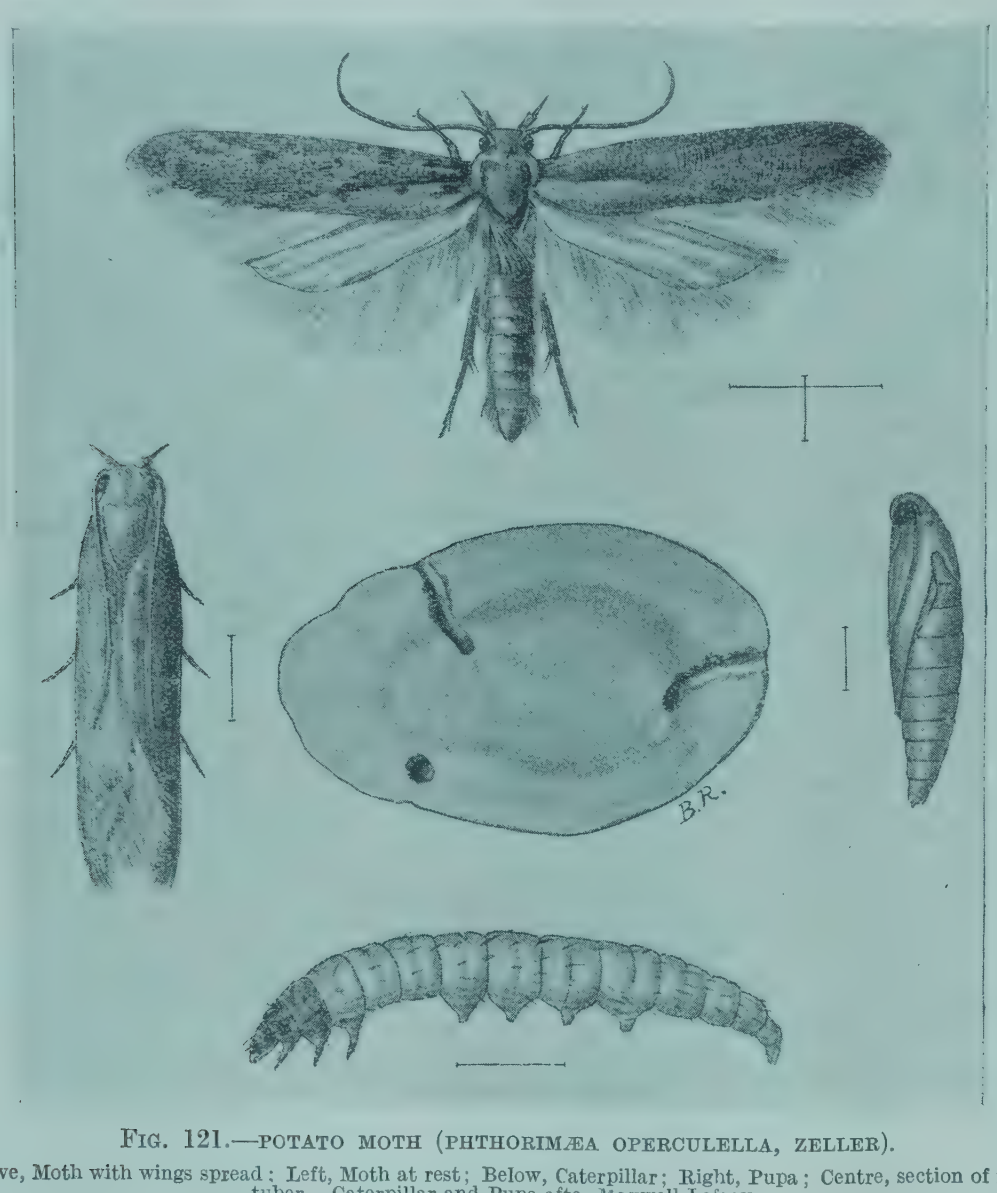


FIG. 121.—POTATO MOTH (PHTHORIMÆA OPERCULELLA, ZELLER).
Above, Moth with wings spread; Left, Moth at rest; Below, Caterpillar; Right, Pupa; Centre, section of mined tuber. Caterpillar and Pupa afte Maxwell Lefroy.

According to the *Rept. of the Intel. Div., Bd. of Agric. and Fisheries*, 1909-10, "no definite case is known of the appearance of the insect in England, but a case was brought before the Board in which a Potato merchant had his goods returned to him on the ground that they were badly damaged by the larvæ of this moth, and it has been scheduled as a precautionary measure." The principal chance of its entry into the United Kingdom lies in infested tubers, and even in such an event it might not survive if it came from a warm district like the south of France. It might, on the other hand, become acclimatised by spreading gradually northwards through France.

The moth (see Fig. 121) is very small, only about half an inch in spread of wings, and the fore wings are silvery-buff or greyish-brown, the hind wings being much lighter. The shades of brown, however, vary rather considerably. Both front and hind wings bear a deep fringe of fine hairs. The moth is nocturnal, and Kirk says that it is active on the wing and also runs rapidly. The larvæ are at first minute, and only half an inch long when full grown. They are dull white, with a pinkish tint, but the head and two first segments are much darker—rather brown. The caterpillar bears a few scattered hairs, and has three pairs of true legs near the head end, four pairs of sucker feet about the centre of the body, and one pair of sucker feet at the tail end. On pupation the larva spins a loose silky cocoon, in which it encloses itself; and the pupa is about one-third of an inch in length, at first bright yellow in colour, but subsequently darker to shining brown.

Minute pearly oval eggs, which later become lead-coloured (Korff), are deposited on the growing foliage and also on ripe tubers. The whole period of metamorphosis is about one month, and Maxwell Lefroy and Evans (*Agric. Jour. of India*, Jan., 1910) say that a single cycle in March (in India) is as follows :—

Eggs laid, March 1.
Eggs hatched, March 7.
Caterpillars full-fed and pupated, March 22
Moths emerged, March 29 to April 3.

One moth that emerged on April 1 laid 25 eggs on April 3, 7 eggs on April 7, 2 eggs on April 9, and died on April 11. As many as 86 eggs were laid by an individual moth in one case. Kirk says that in New Zealand (*Bulletin* 7, *Div. Biol. and Hort.*, 1907) one female laid 117 eggs, and another 123, and that "the moths live for several weeks."

There appears to be some difference in the length of the life-history, according to climate, the larval period in Rhodesia being given by Jack as 19 to 20 days, and in California by Clarke as 6 to 9 weeks, and the complete life-cycle as 63 to 69 days: "Egg stage, 7 to 10 days; larvæ, 42 to 45 days, ordinarily, winter generation 9 weeks; chrysalis, 14 to 16 days; adult life, indefinite, but short." According to Quaintance (1898), the life-cycle in the United States is not more than 20 days. As we have seen above, the life-cycle in India is about a month.

There are usually several generations in the year, the generations overlapping so that all stages of the moth may be found at the same time, and the increase may therefore be rapid. When eggs are laid on the foliage the resulting caterpillars mine the foliage and stalks, and do not appear to reach the tubers beneath the soil, but pupate among the wilting haulm, and give rise to a brood of moths which lay eggs on tubers when dug or stored, and it is to the tubers that the chief damage is done. The larvæ from eggs laid on the tubers burrow in the tubers, render them valueless for human consumption, and open the way for the attack of parasitic fungi. Several larvæ may be found in one tuber, and they "generally pupate close under the skin of the tuber, protected by the gnawed debris surrounding them," and in or on sacks, packing material, rubbish round Potato pits, etc. It is from the brood of moths from infested Potatos that the pest is renewed in spring.

This moth may attack also other Solanaceous plants, for example, Tobacco, Tomato, Solanum carolinense (Chambers, 1878), and Datura stramonium (Jack, 1910). In the United States of America the larva is termed the "Tobacco splitworm," and is chiefly known as destructive to Tobacco (*Yearbook, U.S. Dept. Agric.*, 1910), except in California, where it has been exceedingly harmful to Potatos, dealers estimating that at times the loss in the Salinas Valley alone has been as much as 40,000 sacks in a single year (Clarke, *Bulletin* No. 135, *Agric. Exp. Sta., California*, 1901). It is stated by Maxwell Lefroy that the pest apparently has no other food plant but Potato in India, where it has largely increased the difficulty of storing Potatos, and, eat-

* Previous articles appeared on September 27, October 11, November 2, and December 7, 1912; and February 1, March 1, March 15, and April 26, 1913.

ing away the eyes of the tubers, renders them useless for seed purposes.

The means of combating the Potato Moth are several in number. In the first place, sound, unaffected tubers only must be employed for "seed," and should not be planted on soil that has produced an affected crop the previous year. A definite rotation should be practised. Before planting, tubers from affected districts should be very carefully examined for the presence of the pest, and if need be, a number of the tubers should be cut across to show if there are traces of boring by the larvæ. Should the pest be found to attack the haulm of a growing crop, this may be treated with a poisonous spray, *e.g.*, Paris green, arsenate of lead, or a 2 per cent. solution of barium chloride (Korff), in the hope of poisoning many of the larvæ before they have burrowed into the leaves, etc. At the Potato harvest all haulm and rubbish should be collected and burnt, and the crop must be placed under cover with all speed before eggs can be deposited. If eggs have been deposited on the tubers they might be destroyed by steeping the tubers in a weak solution of formaldehyde, or the caterpillars in an affected crop might similarly be killed—though in the case of large quantities of tubers this plan would hardly be practicable. Larvæ in tubers may also be drowned by steeping the tubers in water. Large stores of tubers may be fumigated with carbon bisulphide, and this may be effected by placing the tubers in heaps, placing sacks soaked in the bisulphide on the top, and covering the whole with a tarpaulin; it will be best carried out in a granary or barn, where the air is comparatively still. Fumigation should be repeated in a fortnight to kill larvæ from eggs, or moths from pupæ. Potatos from affected districts may be similarly treated. The U.S. Department of Agriculture recommend 1½ pounds of carbon bisulphide for 1,000 cubic feet of space.

In fumigating with carbon bisulphide, the greatest care must be taken to bring no light near it, or even a lighted pipe, as the material is highly inflammable and explosive. Potatos should be well earthed up to prevent the moths getting at the tubers through cracks in the soil. After a crop has been infested deep ploughing should follow the harvesting. Wild Nightshades must be destroyed. *H. C. Long*

PRUNUS SUBHIRTELLA.

This Prunus was, I believe, first discovered in Japan. Some five years ago Prof. Sargent kindly sent my employer a specimen from the Arnold Arboretum, and the tree is fast developing into a fine symmetrical specimen, and has attained to a height of 12 feet. Each year it has flowered, and during the past three seasons it has been a beautiful sight about the first week in April.

The flowers are not large, but they are produced freely at intervals of an inch or so, in clusters along the young wood. The petals are a beautiful pale, soft pink. Whilst the tree is in flower not a vestige of growth is to be seen, which makes it still more attractive.

Prunus subhirtella is quite the best and most conspicuous tree now in flower in these gardens. *E. Beckett, Aldenham House Gardens, Elstree.*



Fig. 122.—PRUNUS SUBHIRTELLA. FLOWERS PINK.

CULTURAL MEMORANDA.

WATERING.

Success or failure in the cultivation of plants the roots of which are confined in pots, boxes, or narrow shallow borders, depends, in a great measure, upon the way in which they are watered. An indiscriminate use of the watering-can is responsible for many failures in the cultivation of various kinds of pot-plants and fruit trees under glass. If plants were but endowed with the power of speech, how often would they call for adequate supplies of water at the roots, and at other times reject the application of moisture when not needed. The requirements of plant life in this connection are only to be learned by intelligent and careful observation on the part of those entrusted with the work of ministering to the special requirements of the plants. Freshly-potted seedlings, for instance, at first require only sufficient water, applied through a rose, to settle the soil about the roots, but as the latter permeate the soil in increased numbers water must necessarily be given more frequently, and in sufficient quantitity to moisten the individual balls of earth and roots.

When flowering and fruiting plants growing in pots are in full growth copious and frequent supplies of water are needed, and often in summer-time two or three times daily. Hard-wooded plants, such as Azaleas, Ericas and Camellias, do not absorb so much water as other plants of a different nature, and consequently require less frequent supplies of moisture at the roots. As the peaty soil in which these plants are grown is made quite firm in the process of potting, water takes some time to permeate it, and a second application should be afforded to make certain that the soil is moistened thoroughly. Experience teaches me that the chief of the many causes put forth to account for the unsatisfactory condition of fruit trees on walls, especially Peach trees, in many gardens throughout the country, is a dry condition of the soil in which the trees are growing all the year round. This is a fact that any grower can prove by digging the soil twelve or fifteen inches deep, and the same distance from the wall. Even after a wet summer I have found soil in a Peach border to be as dry as dust at fifteen to eighteen inches below the surface. *H. W. W.*

FOREIGN CORRESPONDENCE.

INJURY TO THE FRUIT CROPS IN GERMANY AND AUSTRIA.

We learn from a well-known German horticulturist that the gardens and orchards of Germany and Austria are in a very serious state. A heavy fall of snow occurred on Saturday, the 12th of April, and was followed by about 11 degrees of frost, which continued until the following Tuesday.

The crops of Apricots, Almonds, Peaches and Cherries are destroyed, but the extent of the injury to Pears and Plums cannot be determined yet. Grapes also have suffered very much, but this crop is not entirely destroyed. The damage extends through the whole of Germany and Austria. Azalea sinensis, early Rhododendrons, Deutzias, and Glycines were frozen completely, and many other shrubs more or less damaged.

Our correspondent states that a warm, long rain might perhaps counteract some of the harm done.

THE RED SUNFLOWER.

In Colorado and New Mexico the common Sunflower, Helianthus annuus, is represented by a form known as lenticularis Douglas, or annuus lenticularis. This plant, which is extremely abundant in fields and by roadsides along the base of the Rocky Mountains, differs from the ordinary cultivated Sunflower in its branching habit, smaller heads, and dark discs. The rays are a fine orange-yellow, as is usual in Sunflowers. In 1910, at Boulder, Colorado, Mrs. Cockerell found a plant in which the rays were deeply suffused with chestnut-red. This was carefully removed to our garden, where it continued to bloom, and eventually produced good seed. As sunflowers are self-sterile, it had to be crossed with other Sunflowers of normal colour, and for this purpose both the wild H. lenticularis and cultivated H. annuus types were used. In 1911 we had a garden full of Sunflowers, about half of which produced fine red colours, some being exceedingly handsome. It appears that the red is dominant to yellow, or, more precisely, dominant to the absence of red, which leaves the rays yellow. The red is an anthocyan pigment, which, superimposed on the orange-yellow of the rays, gives a chestnut-red tint. The red being dominant, it might have been expected that all the plants of 1911 would be red; but it appears that the original plant was heterozygous or cross-bred for red, and hence half its offspring were yellow. It is probable that the "red" variation arose in a germ cell, which mated with a normal cell to produce the original red plants. There is a certain amount of anthocyan in all these Sunflowers, and the red may have arisen through doubling-up of the "red" factor or determiner. This, of course, is hypothetical, but the hypothesis accords with the results obtained. In

Popular Science Monthly of April, 1912, appeared a full discussion of the red Sunflower, so far as known from the experience of 1910 and 1911. A diagram was printed in the form of little drawings of Sunflower heads, showing the results obtained, and the expected product of 1912. Since the original plant was presumed to be heterozygous for red, and was crossed with yellows, *all* the 1911 red flowers were necessarily heterozygous. These, crossed together, would give one in four homozygous red, which was represented in the diagram as of a very dark colour, on the supposition that the pure-bred flowers would be appreciably darker than the cross-bred. We actually obtained flowers which agreed with the drawing, having the rays almost entirely deep red. They were so dark that they rather suffered from an excess of the quality. Unexpectedly, however, the dark flowers were few, and many of those which from the intensity of the red must have been homozygous showed more or less broad orange tips to the rays. These, to which we gave the varietal name bicolor, are really handsomer than the all-red. A very good figure of this variety, taken from a photograph, of course, there will be a long list of horticulturally distinct varieties, arising from various crosses and recombinations. We have now coming into flower indoors the progeny of a cross between the full red and Sutton's "primrose" variety. The plants are not especially remarkable, since they are heterozygous for red, and orange is dominant to the light yellow of the "primrose." These crossed together, however, should give one in sixteen homozygous red on a primrose ground, which ought to be a very fine variety. Horticulturists will recognise that the Sunflower is following the lines of variation already familiar to us in the genera Helenium and Gaillardia; but owing to the tall growth and large size of Sunflower heads, the effect from a gardening standpoint is very different. *T. D. A. Cockerell, Boulder, Colorado.*



THE GHENT EXHIBITION.

FIG. 123.—SOCRATEA FORGETIANA, EXHIBITED IN THE CLASS FOR NEW PLANTS. (See page 294.)

appears in the recently-published catalogue of Messrs. Sutton & Sons. The explanation of the appearance of the bicolor form appears to be this: the wild Sunflowers, many of them, carry a factor for marking, which can be seen on very careful inspection, indicated by a slight difference in the intensity of the orange colour on the basal and apical parts of the rays. When the red factor is introduced, the marking comes out strongly, and the rays are deep red basally, with the apex orange. Some writers have ridiculed the idea of a "marking" factor where no marking is seen, or, at least, is obvious, but there can be no doubt that such a thing exists, both in plants and animals. In addition to the variations described, many flowers show red on the middle of the ray, the base and apex being yellow. The effect is then that of a red ring on a yellow ground, which we think very beautiful when well developed. The 1912 crop at Boulder was cross-pollinated by hand, and it is hoped that the results in 1913 will be good. The named variety coronatus was given to the original red Sunflower in 1910; we now add the bicolor, and there are various minor varieties. Eventually,

FORESTRY.

WILLOWS FOR BASKET-MAKING.

INCREDIBLE as it may appear, yet it is nevertheless a fact that Osiers for wickerwork can be delivered at a cheaper rate in the London and other home markets from various parts of the Continent than they can be produced in this country.

Vast quantities are annually sent from Holland, Belgium and Germany, the home production being quite inadequate to meet the ever-increasing demand. This will appear all the more inexplicable when it is known that Willows suitable for every class of wickerwork succeed well in this country, and further, that the area of land available for their growth is considerable. But the fact is that dearer labour, preferential carriage rates and keen foreign competition have all combined to deal a death-blow to the once profitable, time-honoured industry of Osier culture and basket-making in this country. There are, of course, along the banks of the Thames, in Bedfordshire, Essex and other counties of England and Scotland, Osier beds still to be found, while in Ireland small patches of Willows are cultivated in odd field corners by a few farmers, and sold to the local basket-maker, who exposes the manufactured article in the market place of the neighbouring town. Generally speaking, however, the cultivation of the Osier for purely mercantile purposes is carried out in a very perfunctory way in this country, and can by no means compare with the up-to-date systems that are adopted in various parts of the Continent.

Enormous quantities of wickerwork are used in the agricultural and fishing districts of this country, thousands of herring baskets alone being sent out monthly from a firm in Leith, who have made a speciality of the fishing industry requirements, and who are well known at all the fishing centres from Yarmouth to the extreme north of Scotland. Foreign markets are also largely supplied by the same firm. At other places in Scotland and England the basket-making industry, principally from imported Willows, is carried out in a successful manner. Though the Willow will grow and apparently thrive in any odd corner of a field, particularly if the soil be damper and loamy, yet in order to grow Osiers for basket-making—that is, to produce the heaviest and most profitable crop—a high state of cultivation and considerable expense are necessary. It is a foolish idea to entertain that Willow cuttings stuck into any uncultivated ground without previous preparation or after-attention will produce a profitable crop of material for basket-making. First of all the soil should be trenched or deeply dug over, and all root-spreading weeds such as Couch Grass and Convolvulus destroyed.

The work is all the more successful if carried out during autumn or winter, so that the soil may be sweetened and pulverised by exposure to the weather. Just before planting, a harrow may be passed over the ground, dry weather being chosen for getting the soil into proper tilth for the reception of the Willow cuttings. For the more important classes of wickerwork certain kinds of Willow are alone suitable, and those most commonly cultivated for the trade in England are known as Salix viminalis and S. purpurea. Other varieties bearing local names such as the golden brown Spaniard, long-skinned, white Osier and Sussex new kind are cultivated. The most vigorous growing, perhaps, is S. viminalis, and it is, taking everything into consideration, the most valuable for general basket work. S. triandra is but little behind the preceding in point of vigour, and where small rods are desirable S. vittillina, S. purpurea, S. Forbyana and S. helix are employed. Other kinds are S. stipularis and S. decipiens, both cultivated as being hardy and free of growth.

The cuttings, which are made from one year's shoots, are from 10 in. to 12 in. long, about 27,000 being required to plant an acre. February is the best time to insert the cuttings, as if left later the sap causes the bark to peel, and, in many instances, death is the result. As to the distance apart at which the cuttings may be inserted, 12 in. is not too great, while 18 in. between the rows is about the usual space. After two or three years every alternate plant may be stubbed out, the permanent stools then standing at 2 ft. apart. For ease in cutting and cleaning the wands, long, narrow beds are preferable, a path or roadway being left between each couple of blocks, this also facilitating the killing of ground game, which often prove troublesome in the cultivation of Osiers.

Where a crop of really first-class Osiers for basket-making is to be produced, ground preparation, choosing the best kinds of Willow and careful and clean after-management are all necessities that should on no account be overlooked. This is rarely the case, however; half-hearted methods of cultivation being more the rule than the exception. When we take into account the area of available land in this country that is suitable for Osier culture, it may seem surprising why the home production is so small when compared with our actual requirements, but, as before stated, dearer labour, preferential carriage rates and foreign competition have all combined to place the Continental product at a cheaper rate on the British market than it can be produced at home. *A. D. W.*

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

Sterilising Soil.—Many years ago I had access to fairly good loam for general garden purposes, but there was one serious drawback to its use, for wireworms were present in quantity. Having at hand an old wrought-iron plate, some 6 feet square and about ¼ inch in thickness, I made four brick piers, some 15 inches in height, for supporting the iron plate. The stoke-hole lad was directed to put a fire under the plate, at times covering it with fresh-cut turfs, placed grass side downwards. After the turfs were well heated through they were stacked in an open shed. This method was found effectual in destroying wireworms. Some care is needed not to under- or over-heat the soil. If I were called upon to take charge of gardens again, I should endeavour to have a fixed plant for soil sterilisation. It would take the form of an open-sided shed in some out-of-sight position, with a floor space raised say a foot above the ground level, formed of good, well-burned quarries. Underneath would be a winding flue connected with a small fireplace at one end and a neat chimney at the end of the flue. The outer sides of this floor space should have an edging, say, of two bricks, set on their edges with cement, so as to keep the soil in place and confine the heat thereto. The soil would require turning once or twice. A bricklayer would soon fix up such a shed, which should be long enough to store the sterilised soil. In many gardens, no doubt, there are sheds already which could be easily adapted for the purpose. *Yorkshire Gardener.*

Vandalistic Botanists.—Although the horticultural world is indebted to the travelling botanist for countless additions to our cultivated plants which they have discovered abroad and introduced into this country, there is, unfortunately, another side to the matter, or rather another class of botanists who appear to consider the enrichment of the herbarium, the hortus siccus, as the only legitimate goal of their acquisitions, and think that they have done their duty and achieved a triumph once the rare and perhaps unique plant has been uprooted, properly dried, and recorded. In my now long experience several instances of this kind have come to my notice, and the record of a particularly glaring case lies before me as I write. Since the principle only is attacked neither name of finder nor locality is given, but only the facts. In the United States, where that beautiful fern Adiantum pedatum is fairly common, a fern which is normally perfectly deciduous, the fronds dying down completely in the autumn, a plant was found at the end of November, 1912, in a perfectly green condition, though the ground was frozen hard at the time at a temperature of 25°. Under these circumstances it was perfectly obvious that this particular plant was so constitutionally different from the normal that in all probability under cultivation it would prove to be evergreen instead of deciduous, and thus constitute a most valuable acquisition. What, however, was done with it? We learn that "all of the fronds were green when collected, but two became somewhat brown in the process of drying," and the record concludes with the remark, "How and why this particular plant was enabled to withstand temperatures which destroyed all of its kind and how much longer it might have survived are points over which one can only speculate." Is it not extraordinary that it did not occur to the finder that its survival or non-survival lay entirely at his discretion? All he had to do was to lift it carefully, take it home as a living plant, and test it by growing it on, by doing which he might not only secure a valuable prize but in time could have enriched the herbaria of himself and his friends to his heart's content. It is, however, quite clear from the tenor of his remarks that the precious root was sacrificed, and all that remains of it are the dried fronds and the bare record. That deciduous ferns are capable by a sort of constitutional "mutation" or "sporting" of assuming an evergreen habit is shown by the case in this country of Cystopteris sempervirens, a form of C. fragilis. This was found in the winter in the Highlands of Scotland in a perfectly green condition, precisely like that of the A. pedatum in question, viz., as a solitary plant from which the normal form, though common, had entirely disappeared owing to its perfectly deciduous nature. The finder, however, was not a botanist, but a fern lover. He at once appreciated the prize, lifted the plant, took it home and cultivated it, thus ascertaining that the constitutional variation was a permanent condition. Eventually he sent me some fronds, perfectly green in the dead of winter, and as they were fertile I sowed them and obtained an abundant crop, all of which proved so far from being deciduous that "sempercrescens" rather than "sempervirens" is appropriate, since it grows continually, and at the moment of writing (April) there is a pot of it with last year's fronds perfect and a number of new ones rising, while C. fragilis proper is only just moving. The term "vandalism" is obviously appropriate, strong as it is, when new discoveries are nipped in the bud as it were by precisely those people who ought to know better, and since such records have come before me by pure chance it is to be feared that they only represent a small percentage of the actual cases where the herbarium has proved to be the grave of precious finds. Some time back, also in the United States, a new fern was recorded. Here the discoverer merely took all the first crop of fronds for his herbarium, kindly leaving the root intact, but in the same season he told a friend and the latter visited the spot and took the second crop, an operation from which it is almost certain the plant would never recover. Another case occurred in Scotland, where I was told of the habitat, not this time of a new fern, but of a rare species. When guided to the spot not a trace of the fern could be found, but I learned that a professor had visited the place just previously with a body of students, and the presumption is that again the herbarium had been enriched at the expense of the local flora. *Chas. T. Druery.*

Aphis on Spruce.—With reference to the note on p. 279 of your issue of April 26 stating that Aphis abietina "has been so prevalent this season that numerous trees in different parts of the country have been killed outright," I presume that the trees attacked are not Abies (Silver Fir), but Spruce. At Kew damage is being done to various species of Spruce near the lake, Picea pungens and Picea sitchensis being much more severely injured than the European Spruce (P. excelsa). In Ireland the attack is mainly observed in young plantations of Sitka Spruce and on isolated ornamental specimens of P. pungens, while the common Spruce appears to be hardly affected. As Sitka Spruce is now being planted largely as a forest tree in many parts of Britain and Ireland, it is very important to know whether in this attack we have an instance of an insect becoming virulent and destructive on a new host plant, while it remains comparatively harmless on the species to which it has been accustomed. I cannot find that the common Spruce (P. excelsa) has ever been seriously injured by this pest. The Sitka Spruce, which I have seen lately at Avondale, in Wicklow, and at Dundrum, in Tipperary, have in some cases their terminal shoots entirely stripped of leaves. Specimens of branches of various species affected, with accounts of the age of the trees or plantations, etc., will be much appreciated by the writer, who would be glad to have evidence as to the comparative immunity of the common Spruce, if this is a fact. *A. Henry, Royal College of Science, Dublin.*

A Preliminary Note on a Bacterial Disease of Fruit Blossom and Foliage.—Early in April of this year my attention was drawn to numerous cases of damaged Pear blossom in the plantations at the National Fruit and Cider Institute by Mr. J. W. Eves, pomologist at the Institute. Mr. Eves, who was at the time occupied with experimental work on the pollination of Pears, noticed that many blossom trusses, especially in the case of certain varieties, showed signs of the discoloration and blackening which is commonly attributed to frost or cold winds. The weather at that period was not, in his opinion, severe enough to have caused the damage, and his view was supported by the facts that the extent of the trouble varied considerably, both on similarly situated bushes of the same variety and on adjoining branches of the same bush, and that the styles and stigmas of many flowers were completely discoloured when the flower was still an unopened bud and showed no external sign of damage. On microscopical examination of the damaged flowers I found large numbers of small rod-like bacteria present in the discoloured areas. The isolation of the organism in pure culture was accomplished by Mr. Otto Grove, who is in charge of the bacteriological work at the Institute. In the original flowers examined the bacillus proved to be present in a practically pure condition, unmixed with other kinds of bacteria or with any fungi. This fact pointed strongly to the probability that the bacterium is responsible for the damage. Infection experiments with pure cultures of the bacillus have furnished positive evidence on this point. All the characteristic symptoms have been obtained both by direct needle-prick inoculations with the bacillus and by superficial application of the organism in drops of water on young, apparently uninjured, blossoms. There is therefore no doubt that we have here a genuine case of a bacterial disease of Pear blossom. So far as I have been able to ascertain at present, it has been assumed hitherto that the damage is caused by frosts or cold winds. Although frost damage resembles to some extent this disease, it seems certain from evidence now available that a very large percentage of the cases hitherto regarded as due to low temperature effects must be put down to the action of the bacillus. Many trusses of affected Pear blossoms obtained from this district, and from other parts of the country, have been examined, and in every case the bacillus has been found to be present. The organism is therefore widely, if not generally, distributed. There has not yet been time since the discovery of the bacillus to examine its behaviour closely enough to warrant any conclusion as to its identity with any hitherto described form. This is, so far as I am aware, the first record of its occurrence as the cause of Pear blossom disease. It appears both from cultural characters and from the nature of the disease produced by it, to be quite distinct from Bacillus amylovorus, de Toni, a comparatively well-known organism described by Whetzel and others as the cause of the "fire blight" of Pears. All parts of the flower are attacked by the organism. Discoloured patches have been found on flower stalks, ovaries, stamens, sepals, and petals, and in each instance the characteristic bacteria are present in the diseased areas. The leaves are also attacked. Growers of Pears are doubtless familiar with the blackened patches and marks on Pear foliage at this season of the year. The organism has been found in an active state of growth in the inner tissues of the leaves at such points. Whether or not the shoots and branches of the tree are attacked is at present uncertain. In the case of the variety Catillac, many developing buds have been found seriously injured. Although the worst cases of the disease have thus far been observed on Pear trees, the organism also attacks Apples and Plums. It has been isolated from diseased blossoms of those fruits, and appears to be identical with the form obtained from Pears. Generally, the damage is not so conspicuous in the case of the former fruits, although there is little doubt that it may produce serious effect on the size of the crop. It is not yet known whether other fruits are liable to attack. Since species of Pyrus or Prunus show the disease, it will not be surprising to find that other members of the Natural Order Rosaceæ, at any rate, are susceptible. One of the objects of this preliminary note is to direct the attention of fruit-growers to the disease in the hope that they may assist the investigation which is being carried on by Mr. Grove and myself by sending specimens of affected or doubtful cases on Pears or other plants for examination. That the disease is a most serious one, involving complete or partial failure of the crop of fruit in many cases, is certain. Beyond that it may possess considerable significance in connection with investigations on self-sterility and other fertilisation problems of varieties of different fruits. Negative results after pollination may be due in some cases to the presence of the bacterium rather than to ineffective pollen. There is evidence in the case of Pears to indicate that some varieties [illegible] to the disease much more readily than others. *B. T. P. Barker, University of Bristol, Dept. of Agricultural and Horticultural Research.*

The Week's Work.

THE ORCHID HOUSES.

By W. H. White, Grower to Sir Trevor Lawrence, Bart., Burford, Dorking.

Habenaria.—Plants of H. militaris, H. rhodocheila, H. Susannæ, H. carnea, and its pure white variety nivosa should receive attention. When the new shoots begin to appear through the soil, turn the tubers out of their pots, separate them carefully, and re-pot them singly in receptacles of as small a size as will accommodate them. Place a tuber in the centre of each pot, keeping the crown just below the rim, then fill the space around with clean crocks to within an inch of the top, so that one part of the tuber is in the crocks and the other in the compost. The latter should consist of a mixture of loam, fibrous peat or Osmunda fibre, and chopped Sphagnum-moss, adding moderate quantities of very small crocks and coarse silver sand, mixing the whole well together. Make the compost moderately firm. When the plants have been re-potted, place them on the shady side of the warmer house, and as near to the roof-glass as possible; water should be afforded as advised in the case of Calanthes in the Calendar for April 5. During the early stages of growth the plants should be well shaded from strong sunshine, but when they are well established accustom them gradually to more light. During the time the plants are growing freely syringe the under sides of the leaves occasionally, as this treatment will be beneficial to growth and destroy insect pests.

Cattleya.—Plants of Cattleya Warscewiczii (syn. gigas), C. Hardyana, C. Dowiana, C. D. aurea, and several of their hybrids, are forming new growths, and should be placed where they may receive a moderate amount of sunshine and plenty of ventilation at the warmer end of the house. Although the plants may be growing freely, much care should be exercised in affording water, as an excess of moisture will soon cause the old roots and young growths to decay, and this soon happens if the rooting material is close and stagnant. Whenever the compost gets saturated through over-watering, it generally takes a long time to dry so much that more water is needed, and it is during this interval that the harm is done. If the compost is open in texture and sweet very little fear need be apprehended in this respect, although discretion should always be used. Water may be more freely applied when the flower sheaths are sent up with the young leaves, but the amount of moisture should be lessened gradually after the flowers expand. The proper time to re-pot or afford fresh rooting materials to these plants is soon after growth is completed. Plants of C. Lawrenceana that have just passed out of flower should be placed in the cooler end of the house, and be kept comparatively dry at the roots, otherwise they may re-commence to grow instead of remaining dormant. In the resting season neither the pseudo-bulbs nor the leaves should be allowed to shrivel for want of water, but only a little moisture is needed. As soon as new roots develop from the growths of the current season, and the old ones send out fresh rootlets, afford the plants larger pots or fresh rooting material, should this be necessary. C. Lawrenceana is usually a difficult plant to cultivate, and the plant is not often seen in bloom. After repeated trials, I find that this Orchid grows best in association with Mexican Lælias the whole year round. C. Schröderiæ is passing out of flower, and the plants should be afforded a resting period as recommended for C. Lawrenceana. Such species as C. Trianæ, C. Percivalliana, C. Gaskelliana, C. Luddenianniana, the autumn-flowering C. labiata, Lælio-Cattleya elegans, and many of their hybrids are commencing to grow. Some of these plants are forming fresh roots from the old ones; others will quickly develop roots from the young growths. Such plants may, provided they need more root-room, be re-potted; the young roots will speedily become established in the fresh compost. Plants of C. Mossiæ, C. Mendelii, that have failed to produce flower sheaths, and others that have deteriorated through loss of roots or other causes, will be sure to make roots at this season, and may be re-potted and started afresh. The flower-spikes should be removed before the work of re-potting is done. In the case of unhealthy plants it is best to divide and pot the portions separately to make healthy specimens. The receptacles for these Cattleyas and Lælias should be filled at least one-half their depth with clean crocks, and the larger the pot the more drainage materials should be employed. Avoid over-potting, especially in the case of plants that have been divided or possess unsatisfactory roots. Pot the plants firmly in a mixture of Osmunda fibre and A1 fibre in about equal proportions. Cut the materials into moderately small portions and mix them well together. When preparing the Osmunda fibre it is advisable to remove the brown, mossy substance on the exterior. This may be done easily when the fibre is quite dry. This brown substance retains moisture for too long a time, causing the fibre to decay prematurely; it also binds so closely together that it is difficult for the roots or water to pass freely through it. When the plants have been re-potted, place them on the shady side of the house, and, for a few weeks afterwards, afford water with extra care, merely watering or sprinkling the compost around the edge of the pot to induce the roots to grow. This will keep the centre of the plant on the dry side. When the plants are re-established, increase the amount of root-watering gradually and promote more atmospheric moisture. Avoid over-watering at all times, as Cattleyas, Lælias, and their hybrids are prone to decay from this cause. Afford plenty of ventilation; in mild weather the bottom ventilators should be opened wide both by day and night. During warm and bright weather the top ventilators may also be opened, but cold draughts, or currents of dry air from several different openings, must be avoided. The Cattleya house at Burford has fourteen bottom ventilators, and these are more or less always open.

FRUITS UNDER GLASS.

By James Whytock, Gardener to the Duke of Buccleuch, Dalkeith Palace, Midlothian.

Cool Orchard House.—Houses containing Plum and Cherry Trees, planted out, which have set their fruit, should be kept rather closer during cold, sunless weather. Syringing should be done only early in the morning, and the house closed early in the afternoon, making the most of sun heat. Care must be paid to the eradication of insect pests. This can be done either by fumigation with Nicotine, or by spraying with some good insecticide. The first disbudding of superfluous and misplaced shoots may be done, but the thinning of the fruit should be left until later. The same treatment should be applied to Apples and Pears growing in an unheated orchard house; all the necessary disbudding and pinching of the shoots may be done now, but the thinning of the fruit should not be attempted until it is to be seen which fruits are likely to swell. The inside border should be watered; if the trees are bearing freely and are not too vigorous manure water may be used.

Vinery.—The month of May is a good time to plant young vines. Vines which were rooted from "eyes" last February, and grown in turves for early planting, should be ready for the purpose about the middle or end of May. One-year-old vines in pots should already have been started into growth, as the beginning of April is the best time for planting them. The ball of soil and roots should have been immersed before planting for twenty-four hours in a tank of water and the soil shaken clean from the roots. A house with a shallow pit would be suitable for them. Spread out the roots on two inches of turfy loam, and cover them to the same depth. By the middle or end of May the plants will have made sufficient growth to be transferred to the border. The process of removal should be done carefully. Vine borders are usually made rather shallow and narrow; the width of an inside border should be 3 to 4 feet, and the drainage 2½ or 3 feet below the surface. If the subsoil is a dry, porous gravel, a few inches of rough, ordinary drainage will suffice; and fresh sods, grass side down, should be laid on the top of the drainage. If the border has to be made on a bottom of cold, wet clay place a layer of concrete a few inches thick at the bottom of the border. A drain must then be run along the front, deep enough under the concrete to carry away the water from the tile drains. Nine to twelve inches of broken material should be laid over the whole surface of the concrete, covering the tile drains. The material should be finer at the top than at the bottom, and the layer should be covered with turves placed grass side down. The border should be porous and not too retentive of water. The soil should consist of heavy, turfy loam in a very dry condition. It should be chopped up in rough pieces, and to every five or six barrowfuls should be added one barrow of lime and one of charcoal. When filling the border, each layer should be firmly beaten down, and as the work proceeds some fine bone-meal may be sprinkled on the soil. A little vine manure may be mixed with the top layer. When the border is ready set the young vines carefully, keeping the roots near to the surface, which should be covered with a layer of manure from a spent mushroom bed. Not much fire heat will be necessary, but a mean temperature of 60° should be maintained, rising to 75° on sunny days. As the heat increases more ventilation should be given. The Vines should be syringed daily and the atmosphere kept moderately moist.

PLANTS UNDER GLASS.

By F. Jennings, Gardener to the Duke of Devonshire, Chatsworth, Derbyshire.

Violets.—Violets intended for winter flowering may be propagated in different ways and at different periods of the year. Cuttings may be inserted in the autumn or at this season and on until June, although I am aware that many gardeners in districts south of Derbyshire do not divide their Violets before the longest day, and that they grow and flower their plants well. A successful method of growing Violets in frames, and one that is economical of labour, is as follows:—When the plants have finished flowering, divide them and select the youngest and best crowns, side growths or runners, for stock. A suitable site for planting is under a north wall or other spot that does not receive much sunshine. The soil should not be too light in texture or one that dries quickly, a damp border being preferable. Fork into the soil some spent manure from an old mushroom bed, or decayed leaves, and plant the Violets at about one foot apart, allowing more space for the double than for the single varieties. As the plants grow and the season advances stir the soil with the Dutch hoe occasionally, but avoid working the tool very close to the plants. Remove early formed runners and syringe the plants well, both night and morning, with cold water, taking care to wet the under sides of the leaves, to destroy red spider. Water the roots as often as moisture is needed, and, towards August, feed the plants with weak soot water.

Caladium.—Plants started in small pots in March should be ready for their final potting. The soil should consist of rich loam peat, leaf-mould, and sand in equal parts, adding some charcoal or wood ashes, decayed cow or sheep manure, and fine bones. Do not water the plants for a few days after they are potted, then give the roots a thorough soaking. Shade the glass-house as the sun gains power. The plants will grow best in a warm house, where the atmosphere is moist. Close the ventilators early in the afternoon and then syringe the plants freely.

Coleus.—Plants of Coleus should be potted before they become pot-bound, and placed in a warm house, exposed to the full glare of the sun. Syringe between the pots and sprinkle plenty of moisture about the house, but, so far as possible, avoid wetting the foliage. When the plants are established in their final pots feed the roots abundantly.

Humea elegans.—Plants of Humea elegans that have been grown through the winter in 6in. pots are ready for their final potting, which should be done before they become pot-bound, as this may cause the lower leaves to fall. Employ

rich, light soil composed of loam, sand, and leaf-mould in equal parts with wood-ashes and decayed cow manure added. Grow the plants in a warm house until they are re-established, when they can be used for conservatory or greenhouse decoration. Guard against aphis, which is a great pest of Humea.

PUBLIC PARKS AND GARDENS.

By Superintendent.

Tree Pruning.—Trees should be examined carefully at this time of the year, and all decayed and unsafe branches removed. This should receive particular attention in our public parks, where children engage in play beneath the shade of the larger-growing trees. Not only should the dead and top-heavy branches be removed, but in the case of the Elm especially a careful examination of other branches should be made, as frequently unsound and dangerous trees give but little outward indication of their real condition. In order to obviate accidents a careful examination by a thoroughly competent woodman should be made of all the trees in public parks.

Roads and Paths.—These should be maintained in a thoroughly efficient condition, nothing adding so much to the pleasure of pedestrians as well-kept roads and paths. Keep the centre of the path higher than the sides so that water may quickly pass off into well-constructed channels and drains. The gravel used in public parks should not be of too rough quality; the surface especially should be made smooth by the application of sand or powdered shells.

Games Grounds.—The short time that elapses between the cessation of football and commencement of cricket renders it necessary that all grounds where such games are engaged in should be inspected and put right. By this is meant that surface inequalities should be levelled and bare patches of ground seeded down or returfed—the latter for preference if large patches have not to be dealt with. Groundwork of all kinds should be brought to a close with the advent of spring, so that a green surface may be maintained throughout the year.

Fences and their Management.—Par- fences should, if only for appearance' sake, be upheld in a thoroughly efficient manner. With the advent of warm, dry weather, the work of tarring or painting should be done. The coating of tar or paint should be thin and evenly distributed over the surface.

General Remarks.—Tidiness should be scrupulously maintained in a public park, this not only applying to the roads and footpaths, but to the condition of the trees, shrubberies, and grass lands generally. Unstaked trees will require a periodical examination to see that they have not been loosened by the wind, and that the roots have not been strained or injured in consequence.

THE FLOWER GARDEN.

By Edward Harriss, Gardener to Lady Wantage, Lockinge, Berkshire.

Carnations.—Carnations may be encouraged to grow freely by an occasional light dusting with well-seasoned soot, or by the application of a little artificial fertiliser, afterwards stirring the soil gently with the Dutch hoe. The early varieties will soon need the support of stakes—the wire supports specially made for Carnations are the best, being cheap, easily adjusted, and unobtrusive. The perpetual flowering varieties may be planted out towards the end of the month; in the meantime prepare the ground thoroughly for their reception, as a great deal of the success depends upon the suitability of the soil. If it is poor, a portion of it should be removed, and replaced by old potting compost; or, failing this, finely-chopped loam, leaf-mould, and coarse sand should be used. The plants may be grown in frames, removing the lights on all favourable occasions. If the cuttings were rooted last autumn, they should now be large plants, growing in 5 or 6 inch pots, and will commence to flower towards the end of June, continuing in bloom until late in the autumn. These Carnations make an effective display planted in clumps in the mixed border.

Hardy Ferns.—Certain species of hardy Ferns are useful for planting on steep banks and beneath tall trees. Some of the most beautiful native species will thrive in such situations where other plants would fail. Most of the plants in the hardy fernery are throwing up young fronds, and the old ones and weeds should be cleared away. Some fresh soil, mixed with a little soot, should be placed on the surface to give a tidy appearance.

Staking.—Many of the plants in the hardy flower border are in need of support, but staking must be done carefully, according to the individual characteristics of each species. Some of the growth should be thinned out if necessary, in the case of Perennial Phloxes, Michaelmas Daisies, Chrysanthemum maximum, Helianthus and Helenium. Hazel stakes, well pointed, and not too thick, will be found to answer the purpose. The number of stakes required must be determined by the size of the plant, some requiring several, some only one. For the taller growing annuals, the prunings from trees will form suitable supports. Trees which are supported by stakes should be examined, and the ties loosened or tightened if necessary; if the stakes are too small, or decayed at the bottom, they should be renewed.

THE KITCHEN GARDEN.

By John Dunn, Foreman, Royal Gardens, Windsor.

Chicory.—Where a supply of Salad is required daily throughout the winter, Chicory is almost indispensable. If seeds are sown in rich soil now and again a fortnight later, there should be no scarcity of roots for forcing next winter. Sow the seeds in drills made at about 18 inches apart, and cover them lightly with fine soil. When the seedlings are large enough to handle, thin them to 9 inches apart. Use the Dutch hoe frequently in the row, to keep the ground free from weeds.

Salsafy.—This plant requires to be grown in in light, rich soil which has been previously well broken up with the digging fork. Sow the seeds in drills at 18 inches apart, and thin the seedlings as soon as the work can be done to 9 inches apart in the row. Scorzonera may be grown in the same manner as Salsafy.

Endive.—Make a small sowing of curled Endive in rows at 15 inches apart, thinning the seedlings to 1 foot apart in the rows. The plants that are removed in the process of thinning will furnish a succession to the others. When the more forward of the plants have grown sufficiently, tie their leaves together to blanch them, thus providing heads for very early use.

Cardoons.—Seeds of Cardoon may be sown in small pots filled with rich soil, and placed in a cool pit. The seedlings may be potted in 6-inch pots when they are large enough to be shifted. Grow them close to the roof-glass until about the end of May, when they should be ready for planting in well-prepared trenches.

Leeks.—If large stems are desired the trenches should be at least 2 feet apart, and prepared in the same manner as for single rows of Celery. The Leek is a gross feeder, and should be furnished with liberal supplies of farmyard manure in order to develop into large specimens. But good Leeks suitable for ordinary purposes may be grown on ground which has been simply trenched and manured beforehand. In this case they should be planted in rows at 8 inches apart, allowing a distance of 1 foot apart in the rows. They may be planted by means of an ordinary garden dibber in drills drawn with a hoe.

Lettuces.—Plants raised under glass should be set in the open as soon as possible, in rows, at 1 foot apart, allowing the same distance between the plants in the rows. Make frequently small sowings of this Salad throughout the summer, choosing, as the season advances, a cooler situation, so that the plants are not dried out by the sun. The following varieties are largely cultivated at Windsor for summer use: Mammoth White Cos, and Prince of Wales Cos, Cabbage Lettuces Monument, Dickson's Pearl, and Iceberg. All the Year Round and Veitch's Perfect Gem are two other good varieties.

Potatos.—Potatos in pits should be ventilated freely, removing the lights entirely on fine mornings, but replacing them again at night. Whenever the weather is favourable, a little ventilation may be permitted at night. Afford the plants liberal supplies of water whilst the tubers are swelling.

Celery.—Continue to transplant seedling Celery from the seed boxes, in frames, allowing a space of 6 inches between the plants in order that the plants may be lifted with a good ball of soil when they are ready for planting in the trenches. The soil in which the seedlings are pricked off should be placed to within a few inches of the light, so that the plants may grow sturdy. Make another small sowing to furnish plants for late supplies. As soon as the seedlings are well through the ground admit air freely to keep them from growing spindly. It is important that the watering be done with great care from the very commencement, for if Celery is once allowed to suffer from drought, the crop is never satisfactory.

THE "FRENCH" GARDEN.

By Paul Aquatias.

Hot-Beds for Frames.—When the weather is more settled, the frames and lights may be removed from the Carrots and Turnips to the Melon quarters, but should the temperature not be favourable to such removal the lights may be set for a short time on pots or on bricks to allow plenty of ventilation without unduly checking the crops. As the Carrots and Turnips are now swelling their roots it is necessary for the soil to be kept moist always.

Melons.—The first batch of Melons will be ready for their second pruning in the course of a few days. All growths on the main stem should be removed carefully. Cut the first leaves on each lateral if they are too close to the collar, in order to allow the sun and air to enter. Stop the laterals at the fifth or sixth leaf; the stronger the growth the shorter the lateral should be stopped. The amount of ventilation may be increased in calm, warm days. An abundance of air may be admitted between noon and 2-p.m., but close the lights at any fall in the temperature, covering them at night with mats.

Hot-Beds for Cloches.—The marketing of the Cos Lettuces should now be pushed forward, as those grown on cold-beds will be ready within 12 or 15 days. When a third batch has been set on the north side of the beds transfer the glass to these plants as soon as the second batch is cleared.

Cold-Beds.—Where Lettuces and Cauliflowers have been grown concurrently, the latter will now occupy the whole space. Remove the frames, hoe and rake the ground, and apply a mulching of short manure. The only variety of Cabbage Lettuce ready for sale is the White Passion, but the marketing of this need not be hastened on account of the poor growth of the Lettuces planted outside, which will not be saleable for at least three or four weeks.

Cucumbers.—Plants raised from seeds sown late in March, or early in April, will soon be ready for placing in their final quarters. Set them in beds prepared as for Melons, two plants to every light, at one foot from the bottom of the frames, directing the stem towards the top of the frame. Cucumbers require more shade and less ventilation than Melons. Ridge Cucumbers should be planted in a bed of spent manure at 4 inches apart each way. Keep the lights closed and the soil moist to favour a quick germination.

Tomatos.—If good plants are available they may be planted in a sheltered position 2 feet apart each way, covering them with cloches that are no longer required on the hot-beds. They can also be planted 24 per frames of three lights. When well established stop the plants at the fifth or sixth leaf. It is essential for this method of cultivation to mulch the ground with a thick layer of straw, hay or bracken, to afford a dry resting place for the fruit.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the **PUBLISHER**, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher. — *Our Correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the* PUBLISHER; *and that all communications intended for publication, or referring to the Literary department, and all plants to be named, should be directed to the* EDITORS. *The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.*

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS, 41, Wellington Street, Covent Garden, London.** *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

Special Notice to Correspondents. — *The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

Illustrations.—*The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, MAY 5—
Surveyors' Inst. meet.

TUESDAY, MAY 6—
Forest Gate Chrys. Soc. meet. Scottish Hort. Assoc. meet. Nat. Amateur Gard. Assoc. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich—50.6

ACTUAL TEMPERATURES:—

LONDON.—*Wednesday, April 30* (6 p.m.). Max 57°. Min. 50°.
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—*Thursday, May 1* (10 a.m.): Bar. 29.6. Temp. 50°.
Weather—Overcast.

PROVINCES.—*Wednesday, April 30.*—Max. 56° Yarmouth; Min. 50° Preston.

SALES FOR THE ENSUING WEEK.

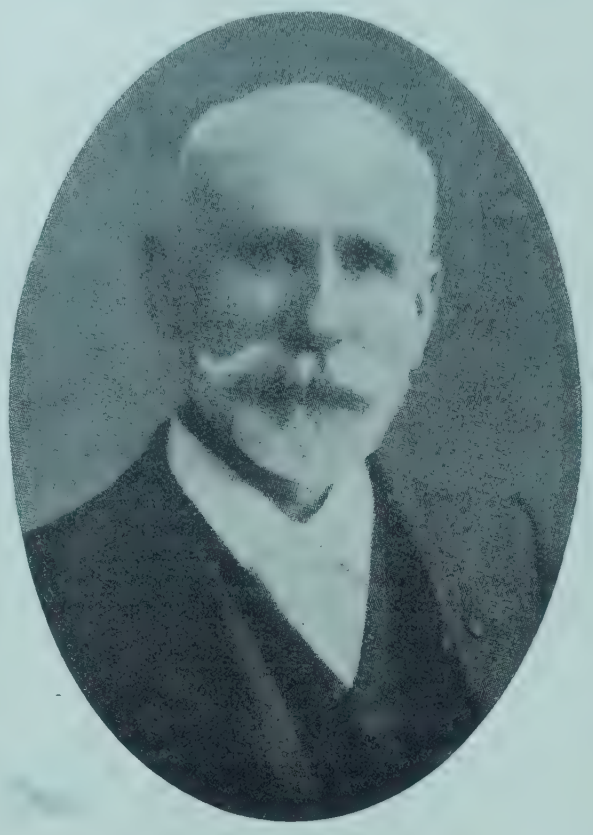
WEDNESDAY NEXT—
Hardy Bulbs, Herbaceous Plants, etc., at 1; Japanese Plants and Liliums, at 3.30; Palms and Plants, at 5. At 67 and 68, Cheapside, E.C., by Protheroe and Morris.

THURSDAY NEXT—
Clearance Sale of Bedding Plants, Orchids, and Garden Effects, at The Gardens, Streatham Grove, Norwood, S.E. By Protheroe and Morris, at 12.

FRIDAY NEXT—
Imported Odontoglossum crispum and established Orchids. At 67 and 68, Cheapside, E.C., by Protheroe and Morris, at 12.45.

The Ghent Show.

The Ghent Quinquennial Exhibition is unique, and reflects the greatest credit on the horticulturists of the town and neighbourhood and country in which it is held. There is no parallel in the history of horticulture to the enterprise and sagacity that have distinguished the gardeners of Flanders in this connection; nor has any other provincial town promoted a society which has acquired anything like the prestige and influence which is enjoyed by the Ghent Society. Many changes have taken place in the ranks of recent years, first one and then another of those who bore the responsibilities of office has been called away, including in recent years Comte Oswald de Kerchove and M. Edward Pynaert, the only remaining link with the long past being that veteran Belgian horticulturist, M. Frederick Burvenich, who again in 1913 prepared the design for the arrangement of the exhibits in the Azalea Hall. Past workers are greatly missed, and they will be long remembered with gratitude, but, fortunately, other men have been forthcoming who emulate the examples of those who have gone before. M. Callier, president; M. Ceuterick, vice-president; Lucien de Cock, secretary; and M. Duquesnoy, treasurer, are all popular servants of the Society, and the success of their joint efforts is proved by the magnificence of the



M. ALEXIS CALLIER,
President of the Ghent Horticultural Society.



M. LUCIEN DE COCK,
Secretary of the Ghent Horticultural Society.

exhibition. The organisers of the 1913 show were called upon to adapt their arrangements to changed circumstances, inasmuch as the exhibition took place in new buildings provided by the authorities of the International Exhibition, instead of on the time-honoured site. But this fact appeared not to have caused much trouble, and it is more than probable that compensation for any slight difficulties that may have been felt will be found in the benefit the floral show obtained from the wide advertisement of the general exhibition. Indeed, if we may judge by the number of visitors on Sunday, Monday, and Tuesday last, when the trains to and from Brussels were excessively crowded, the financial success of the exhibition is assured.

The Ghent Exhibitions have been held so often, and with such uniform success, that there is generally some risk of monotony in the praise which is bestowed upon them. Admirably managed and supplied with marvellously well cultivated plants these exhibitions have done much to establish and fix the standard of International Horticultural Shows. To the observer who has been a regular visitor to the Quinquennials there is, however, an indication of change and signs of departure from custom which prove that horticulture is subject to the caprice of fashion. At all previous Ghent shows the outstanding features have been the superb foliage plants and the wonderfully floriferous Azaleas. The Azaleas remain now as always unchallengeable in their splendour; but as many of the older horticulturists will learn with regret the supremacy of the decorative foliage plants is challenged, and their show days are numbered. This is by no means due to any loss of cultural cunning on the part of the Belgian growers, for visits to the nurseries and the specimens exhibited this year indicate that these decorative plants are as well grown as ever. Their decreased prominence is due solely to the fact that exhibitions reflect the trend of commerce, and the horticultural trade in fine foliage plants has fallen off in recent years.

Those who do not know the resource of the Belgian growers might be disposed to condole with them on the reduced trade in these beautiful plants. Condolence is, however, not required, for the Continental growers have disarmed trouble by turning their attention to new fields of enterprise. Thus it would be interesting to know how great is the extent of increase of the export trade carried on by Belgium with the United States. This trade certainly is enormous, as it is of recent origin, and consists in the export of Palms and the less tender decorative stove plants and Azaleas. It is interesting to observe that so intricate are the interrelations of commerce that this country shares to some indirect extent in this rapidly increasing trade; for of their plants, which are sold in New York and derived from Belgium, not a few are raised in Great Britain. In this connection it may be news to some of our countrymen to learn that many of the choicest cut flowers on the Paris market at the present time, including Orchids and Roses, have been grown in England. Horticultural trade is not only an exchange, but an interchange of commodities—English Violets are on sale in Paris, and French Violets are to be bought in Covent Garden market.



THE GHENT EXHIBITION.

Photographs by W. J. Vasey. *Copyright*

FIG. 124.—AZALEAS AND OTHER COOL-GROWING PLANTS WERE EXHIBITED IN THE HALL ILLUSTRATED ABOVE, AND PALMS AND OTHER STOVE PLANTS IN THE ANNEXE SHOWN BELOW.

The interesting exhibit on the present occasion by M. Heursel of one hundred species of plants exhibited at the Ghent shows between the years 1809-1909, with the year of exhibition and name of exhibitor, afforded a striking testimony to the fact that a very large number of plants introduced to Europe during the past century were first brought to the public notice at the Ghent exhibitions. In this way the classes for new species of plants, always found in the Ghent Schedule, have given an impulse to nurserymen to increase their efforts in collecting wild species. Naturally enough, the task of providing striking novelties becomes more difficult on each occasion, but as our report shows Messrs. Sander and Sons contributed a collection last week, whilst the new hybrid Pæony exhibited by M. Lemoine will bring increased fame to one who has raised an extraordinary number of first-rate garden plants in recent years.

Of the many interesting features of the Ghent Show other than those already referred to, our special reports speak so fully that enumeration here is unnecessary; suffice it to offer to our Belgian confrères our cordial congratulations on the success which they have achieved. Though we are not in a position to assert that the present excels all its predecessors—for the origin of the series dates from 1808—we have it on the authority of our colleague, Mr. James O'Brien, who speaks as an eye-witness, that the present show is the equal of any of the last ten of the series of Quinquennials.

British jurors were greatly gratified in the appointment of Sir Harry Veitch as honorary president of the jury, an appointment that was no less popular to German, French, and Belgian visitors than to ourselves. On every occasion when Sir Harry addressed the jury he received fresh proofs of the high estimation in which he is held by horticulturists generally.

Exhibits from England consisted chiefly of Orchids and Carnations; the Orchids are described in another column, but circumstances compel us to hold over our remarks on Carnations until next week.

Royal Gardeners' Orphan Fund.—The twenty-fifth annual dinner of the friends and supporters of the Royal Gardeners' Orphan Fund will be held under the presidency of Colonel the Right Hon. Mark Lockwood, M.P., at the Hotel Cecil, Strand, on Thursday, the 15th inst., at 6.30 p.m.

Bequests by a Nurseryman.—The late Mr. Edward Webb, senior partner of the firm of Messrs. Edward Webb and Sons, Stourbridge, left £5,000 to the Corbett Hospital, Amblecote, Staffs, as to £3,000 for or towards a wing to be called the Margaret Jane Webb Wing in memory of his wife, and as to £2,000 for the furnishing and equipment of that wing. Mr. Webb's estate was of the gross value of £947,633, of which the net personalty amounted to £921,511.

Kentia Seed Industry.—We learn from the *Sydney Morning Herald* that the Australian Minister for Agriculture and Acting Minister for Lands, Mr. Freyle, recently stated that the Cabinet had decided to adopt the report of the Royal Commissioner on the Palm seed industry of Lord Howe Island. The Commissioner recommended that the existing company which controlled the large export trade should be wound up, that occupation of licences on the island should terminate at once, and that a new company of the Lord Howe Islanders be formed.

Scarcity of Potatos.—We learn from returns published by the Board of Agriculture that 24,274 tons of Potatos were imported during the week ending April 25, compared with 740 tons in the corresponding week of 1912, and the exports were 221 tons, compared with 30,190 tons last year.

Lime-Sulphur and Bordeaux Mixture for Spraying Potatos.—Further experiments by M. T. Munn (*Bull.* 352, New York Agricultural Experiment Station) confirm the conclusion reached as the result of earlier trials that lime-sulphur cannot replace Bordeaux mixture as a spray fluid for late blight of Potatos. Whereas Bordeaux mixture prolonged the life and increased the yield, lime-sulphur dwarfed the plants, and failed to check the late blight.

A New Begonia.—A note in *Le Jardin* (April 20, 1913) records the production by M. Lemoine of a new hybrid Begonia, Nancy. Like Begonia Gloire de Lorraine, which was raised by Victor Lemoine, the new plant is derived from B. socrotana. It comes into flower in December, and is at its best in January and February. The new hybrid has short upright stems, large, substantial dark-green kidney-shaped leaves. The flowers, borne in dense clusters on upright flower-stalks, are twice the size of those of Gloire de Lorraine, almost all male, of good shape, and of a rich shade of rose carmine.

Belgian Gardeners.—In the course of an exhaustive report on the position of gardeners in Belgium (see *La Tribune Horticole*, April 12, 1913), the Conseil Supérieur de l'Horticulture draws attention to the long hours and low rate of pay to which the gardeners in various parts of Belgium are subject. In the neighbourhood of Ghent, for example, the wages are three francs for a day's labour of 13, 14, 15, or even 16 hours. Children of eight or nine years of age are not infrequently employed, and the employment of women in rough garden work appears to be on the increase. The report makes a number of suggestions, which, if adopted, should do much to improve the lot of the Belgian gardener.

Successes at the New York International Exhibition.—At the New York International Horticultural Exhibition, held on April 5 to 13, Sir Jeremiah Colman, Bart., Gatton Park, Surrey, gained the premier award, a Silver Cup, for the best specimen orchid, a plant of Odontioda Bradshawæ. The plant carried two very fine spikes, the larger with more than 740 flowers. Odontoglossum Queen of Gatton was awarded the second prize in the open competition for the best specimen Odontoglossum.

Norwich Flower Show.—Messrs. Daniel Bros., Norwich, were awarded a Gold Medal for their exhibits at this exhibition, of which a brief report was given on p. 277.

Spring Flowers at Belvoir Castle.—Mr. Divers informs us that the spring flowers at Belvoir Castle are making a fine display, and the plants will continue in a good condition for several weeks. The Duchess's Garden is open to visitors daily, with the exception of Sundays.

The Microflora of Stilton Cheese.—From enumerations made by Professor Percival and Miss G. Heather Mason, it appears that a gram of newly-made Stilton cheese may contain from 1,000 to 3,000 millions of bacteria and fungi. It is perhaps a relief to know that when ripe the cheese is comparatively dead—only containing a mere matter of 50 to 100 million.

Poetry and Plants.—Some charming lines on the Foxglove appeared in the *Saturday Westminster* of last week; but although the poem shows that the writer is an acute observer, it demonstrates that he is weak in natural history. No poetic licence will make Digitalis purpurea do what this Foxglove of the poet does—

"And the fair plant will seed and die, and shrink
Down to the buried root for winter sleep
To rise again once warm with April rain
for biennials, once blossomed, [illegible]
more



THE GHENT EXHIBITION.

Fig. 125.—eryobotrya japonica variegata in messrs. sander & sons' 1st prize collection of new plants.

GHENT INTERNATIONAL EXHIBITION.

APRIL 26—MAY 4.

THE Quinquennial Exhibition of the Société Royale d'Agriculture et de Botanique de Gand was opened at the Floralies, Ghent, on Saturday, the 26th ult., in the grounds of the Great International Exhibition arranged for the coming summer. The exhibits were displayed mainly in two great halls, the larger of which, providing an area of nearly 3 acres, was filled with Azaleas, Rhododendrons, Cape plants, Carnations, and other greenhouse plants; whilst the smaller hall, of an area of 1¾ acres, was utilised for Palms and other stove plants, and was heated for the purpose. The Orchids were displayed in rooms in two galleries, above a grand salon, approached by a flight of steps from the Azalea hall. These rooms were in some cases only sufficiently large to accommodate the plants contributed by one or two exhibitors, and the public being thus prevented from getting a view of the Orchid exhibits as a whole, it may well be that the impressions obtained of the display suffered in consequence.

The jury consisted of representatives from most of the European countries, and from America and Egypt. The total number that accepted invitations was about 300. Of 49 who accepted from Britain there were 40 present.

Sir HARRY J. VEITCH was appointed Honorary President of the Jury, and M. A. VIGER General President.

THE CEREMONIES.

The traditions of the Ghent quinquennials for unbounded hospitality were well maintained on this occasion. The jury assembled in the Grand Hall at 8.30 a.m. on Friday, the 25th ult., when the President, M. CALLIER, gave a short address, and the instructions, schedule, etc., were handed to each member. The sections, as they were formed, grouped themselves in particular places, at the sides of the hall, clearly pointed out in printed directions, thus preventing the least confusion, and greatly facilitating the commencement of adjudication. So numerous were the sections, however, that the judging was soon completed, and there was plenty of time to get to the Casino of the Society, situated in another portion of the town, for the luncheon offered to the judges and officials. M. CALLIER presided at luncheon, and he was supported by the Belgian Minister of Horticulture, Sir HARRY VEITCH (Hon. President of the Jury), M. A. VIGER (President), and most of the vice-presidents, the company numbering something like 400. Speeches were delivered by M. CALLIER, Sir HARRY VEITCH, and others.

On Saturday, at 2.30 p.m., KING ALBERT paid a State visit to the exhibition. His Majesty was accompanied by the Queen and his little son, PRINCE LEOPOLD. During the Royal visit, which lasted for upwards of three hours, the President of the Société Nationale d'Agriculture et de Botanique de Gand presented to His Majesty the President of the jury and the principal officials.

Early on Sunday morning there was the "Raout," offered by the "Chambre Syndicale des Horticulteurs Belges." The Belgian Nurserymen's Society always offers its hospitality on these occasions, which are looked forward to as providing opportunities for the meeting of old and new friends.

THE BANQUET.

The great banquet took place on Sunday evening, in the Casino of the Society, and this event brought to a close the ceremonies connected with the exhibition. The President of the Society presided over the vast assembly and was supported by the Minister of Agriculture, the French Minister of Agriculture, the Presidents of the jury, M. WARTEL, and the principal officials. On the right of M. CALLIER was M. GEORGES HELLEPUTTE, Minister of Horticulture, and on the left, M. HUBERT, Minister of Public Works and Industry. At the table of honour were the authorities of the town of Ghent, of West Flanders, the Department of Agriculture, the Presidents and Vice-Presidents of the jury, including Sir HARRY VEITCH, M. VIGER, M. CEUTERICK, F. LAMBEAU, L. GROSJEAN, VICTOR DU PRE, and FIRMIN DE SMET. Over 400 guests attended the banquet.

M. CALLIER proposed the toasts of the King and the Royal Family of Belgium, the chiefs of foreign Governments represented at the banquet, and the Belgian Government, coupling the last toast with the names of the Minister of Agriculture, M. G. HELLEPUTTE, and Minister of Works, M. HUBERT. M. GEORGES HELLEPUTTE responded, and said that he was proud to be called Minister of Horticulture. He drank to the success of the Société Royale d'Agriculture et de Botanique. M. CEUTERICK, Vice-President of the Society, toasted the members of the jury, specially mentioning Sir HARRY VEITCH and M. VIGER. M. VIGER and Sir HARRY VEITCH responded on behalf of the French and English jurors. M. BENARY and M. STUART responded for Germany and Holland. M. COOREMAN, late President of the Belgian Parliament and Chairman of the Managing Committee of the Ghent World's Fair, proposed "The Exhibitors," and M. BRAUN, Mayor of Ghent, "The Government." M. G. WARTEL, Chairman of the Managing Committee of the Flower Show, proposed "The Press, Foreign and Belgian." M. BUYSSENS, of the *Tribune Horticole*, responded, and proposed "The Members of the Executive Committee of the Flower Show," namely, MM. WARTEL, CALLIER, CEUTERICK, L. DE COCK, A. DE SMET, R. DE SMET, R. DELMOTTE, V. HEURSEL, and FRED. BURVENICH.

BRITISH GATHERING IN BELGIUM.

On Saturday evening, the 26th ult., a number of visitors from Britain assembled at the Hôtel de la Porte, in the Place d'Armes, at a dinner convened by Sir F. MOORE, W. WATSON, and R. HOOPER PEARSON after the jurors' lunch on the previous day. Sir HARRY J. VEITCH presided, and Sir JEREMIAH COLMAN, Bt., filled the vice-chair.

The Chairman proposed first the toast of "King George," and next "The King and Queen of Belgium." He referred to the State visit to the exhibition, and expressed the good wishes entertained on the part of Englishmen for the Belgian Royal family, and for the prosperity of Belgium.

Sir JEREMIAH COLMAN made a most appropriate and pleasant speech on the subject of horticulture, and Sir FRED. MOORE toasted "The British Jurors" in vigorous and characteristic fashion. The Chairman's health was proposed by his old friend, Mr. GEORGE PAUL, who not only expressed the admiration of all English gardeners for the splendid qualities that distinguished Sir HARRY VEITCH, but also referred to some personal incidents which have occurred since the two men first formed an acquaintanceship at the same school.

The meeting was a great success, and at its conclusion the company joined in singing "Auld Lang Syne."

As this dinner is believed to be the first of the kind which has taken place on the Continent, it may be of interest to append the names of those present :—

Chairman, Sir HARRY J. VEITCH; vice-chairman, Sir JEREMIAH COLMAN, Bart.

Alexander, H. G.	Moore, Sir Frederick W.
Bevan, Thomas	Moss, John S.
Brooks, S. J.	Newstead, Prof. Robert
Brunton, J. S.	Page, W. H.
Cairns, John	Paul, George
Collier, J	Payne, C. Harman
Cuthbert, R. J.	Pearson, Charles E.
Curtis, Chas. H.	Pearson, R. Hooper
Cuthbertson, W.	Pettigrew, W. W.
Cutbush, H. W. L.	Pitt, H. T.
Cutbush, W. H.	Sander, F. K.
Dutton, A. F.	Sander, F.
Engelmann, C. G.	Sander, Louis
Frogbrook, R. J.	Stephens, T. W. W.
Gordon, George	Tandevin, C. H.
Guttridge, J. J.	Turner, Arthur
Findlay, Robert	Veitch, P. C. M.
Heal, John	Watson, William
Hudson, James	Weathers, John
Ker, Robert B.	Whitton, James
Low, Stuart H.	Willis, E. T.
McKerchar, J.	Wolfe, G.

There were still other visitors from Britain who were unable to be present.

CROWDED HOTELS.

Those who have been accustomed to visit Ghent in former years will remember the occasion of 1913 as providing a great contrast to past experience. Not only were the tariffs at the hotels more than double, but the accommodation was poor in the extreme. The requirements imposed by such an international exhibition as that to be held at Ghent during the coming summer are very considerable for a town of that size, and it would appear that its resources will be taxed to the uttermost in providing for the numerous visitors.

The Exhibits.

NEW PLANTS.

ALTHOUGH there is less excitement in this country over new introductions for stove culture than formerly, the great Belgian Exhibition would be shorn of an interesting feature if it had not its collections of decorative foliage plants "never previously exhibited in Ghent." There was a time when the competition in the classes for new plants at this exhibition was as keen as, we might say keener than, in any other class. It is to the credit of Messrs. SANDER that they continue to contribute, in their exhibit of new introductions, a number of plants possessed of characters which appeal not only to a taste for the decorative, but to an interest in tropical vegetation. The species exhibited by this firm were as follows :—

SOCRATEA FORGETIANA (see fig. 123).—It is not possible to decide whether this Palm is an Iriartea or a Socratea, but the young plants certainly bear a close resemblance to S. exorrhiza, the Pashiuba of Brazil and Peru. Mr. Forget collected the seeds in the latter country. The largest of Messrs. SANDER'S plants are at present less than a yard high, but they possess striking characters, the stem being round, the sheathing leaf bases clothed with dark brown furfuraceous hairs, the leaves pinnate, the lower pinnæ much smaller than the terminal one, which is over a foot wide and long. Probably when the plants are larger this difference in the pinnæ will be less pronounced. There is no Palm in cultivation like this Socratea, the texture of the leaves being almost that of leather and their colour a dark rich green. The roots of the Socrateas are peculiar; they are very stout, and in large plants they form a stilt-like support to the trunk, which is elevated a yard or more above the ground. Bates described S. exorrhiza, which he saw in abundance near Para, where it grew to a height of about 40 feet, as having rather rigid leaves with broad pinnæ, and a peculiar kind of beauty; the stout roots were studded with thorns, whilst the trunk was thornless. It grew in very moist situations, and from what we know of this Palm it can only be cultivated with success by treating it as a swamp plant. Last year Messrs. SANDER exhibited this plant under the erroneous name of Ceratolobus.

PHŒNIX ANDAMANENSIS, as the name indicates, is a Date Palm from the Andaman Islands. It has been in cultivation for many years at Kew, but we have never seen it elsewhere until Messrs. SANDER obtained seedlings of it from its wild habitat. It differs from all other cultivated species of Phœnix in the regularity of its pinnæ and in the terminal one being narrow. It has practically no spines. In habit it is more elegant than any of the larger-growing Date Palms, not even excepting P. rupicola, which it somewhat resembles. It is likely to prove a useful ornamental Palm for tropical gardens and plant houses.

CHAMÆDOREA PUMILA.—The genus Chamædorea comprises some forty species, natives of Central America, Mexico, and Peru. At least a dozen of them have been, or are still, in cultivation as garden plants, and, whilst the plant under notice does not agree with any of these, it may possibly turn out to be one that has been already described. In habit it most nearly resembles C. tenella, the smallest known Palm, and C. geonomæformis, also a diminutive species, but it differs in several particulars, the most marked being the glaucous green of its foliage. Messrs. SANDER obtained it from Costa Rica, and in their nursery plants only a foot or so high have produced inflorescences. The stem is slender, the leaves are bipartite, about six inches wide, elegantly curved, the margins serrate, and the rachis is clothed with floccose hairs; the spadix is lateral, and has six slender, drooping branches

6 inches long, bearing small, close-set, dark green, nut-like flowers (male). There are not many Palms that will grow to full size in a 48in. pot, but this is one of them.

Trevesia Sanderi (see fig. 126).—Most of the genera of Araliaceæ are remarkable for their extreme variation, Aralia itself and Hedera being well-known examples. Trevesia, although less well known in gardens, is another, the few recognised species, all natives of Eastern India, Malaya, and Polynesia, being difficult of discrimination owing to their very variable characters. This is most marked in their foliage. T. palmata and T. sundaica are the best known, the latter being the more striking from a horticultural point of view. It is possible that T. Sanderi is a form of T. sundaica, but there are good grounds for giving it a distinctive name. Messrs. Sander & Sons introduced it from Annam, and in their nursery it has proved a free-growing, sturdy shrub, with a stout, prickly stem and long-stalked leaves, 2 feet across, the blade of which is digitate, the divisions, spreading fan-like, irregularly pinnatifid, and joined at the base in a manner that suggests the web-foot of an aquatic bird. The plant has grown well in a greenhouse, so that it will most likely thrive in an ordinary conservatory. It is a really striking foliage plant, suitable for subtropical bedding. The leaves, when young, are tinged with pink.

Alocasia Micholitzii.—This is a distinct plant in the way of A. Sanderiana, of which A. gandavensis is a variety. Messrs. Sander introduced it from "Polynesia," and it was one of the new plants shown by them at the Chelsea International last year. It differs from A. Sanderiana in its longer leaf-blade, which is sagittate, 18 inches or more long and 6 inches broad, the basal lobes 6 inches long; margin sinuate, the mid-rib and principal nerves silvery white, the rest of the blade a dark, velvety green; the petiole is round, smooth green, mottled or marbled with dull brown. Flower scape a foot long, with a green stalk and a creamy white ovate spathe, the erect spadix being pale yellow. The plant has a value only for its handsome foliage, and where decorative stove foliage plants are in favour it is likely to find appreciation. As a garden plant it is better than A. Sanderiana, because it is easier to grow under ordinary stove conditions.

Alocasia colossa.—Among plants that are prized for grandeur and richness of leaf coloration the Alocasias are pre-eminent. Thus we have A. Thibautiana, A. grandis, A. gigantea, A. spectabilis, A. Lowii, A. metallica, A. Watsoniana, A. zebrina, etc., all strikingly handsome foliage plants, which are most effective in tropical plant houses. Messrs. Sander & Sons have added a notable species in A. colossa, which has leaves of enormous dimensions, of an uniform bright green colour. They obtained it from the "East Indies," which is tantamount to saying that its habitat is not clearly known. Anyhow, it is a distinctly handsome addition to the garden representatives of the genus.

Dracæna regalis.—The forms of Cordyline terminalis, popularly known as Dracænas, are very numerous. They are all seedling sports of garden origin, and their range of characters is exceptional. Some of them are remarkable for the width and colours of their leaves, such as D. Shepherdii and D. Baptistii. Messrs. Sander's latest addition is D. regalis, which is in the way of D. Baptistii, but of greater elegance of habit, and the leaves are bright green with stripes and margins of a salmony pink colour, as, also, are the petioles.

Eriobotrya japonica variegata (see fig. 125).—The Japanese Medlar is an old garden favourite, grown in this country for its handsome evergreen foliage, and in warmer regions for the sake of its edible fruits. Messrs. Sander have obtained from some source a variegated sport of it, which is likely to become a popular garden plant, the variegation being particularly pleasing, some of the leaves being more milk-white than green. It is not generally known that the Japanese Medlar is quite happy when grown under the shelter of a wall in the neighbourhood of London: in other words, it is much hardier than is supposed.

Dieffenbachia Sanderæ is an addition to the exceptionally large-leaved kinds of Dumb Cane, such as D. grandis, D. imperialis, D. robusta, [illegible] found by their collector. Mr. Forget, in Peru, and, as grown by them, it has proved a handsome stove foliage plant; the very broad, oval, dark green leaves are marked at the base with creamy white.

Maranta Sanderæ, properly a Catachea, as all the erect, large-leaved garden Marantas are, is a handsome plant in the way of M. Veitchii and M. ornata.

Asparagus gracillimus is a very finely divided variety of the popular A. plumosus, of which we have already the varieties nanus, albanensis, tenuissimus, and cristatus.

Polypodium Bartelsii, a variety of the polymorphic P. iriodes, a widely distributed old-world species, has somewhat leathery leaves, prettily divided. It has been introduced from Queensland.

Pæony La Lorraine.—The Ghent Show of 1913 will be remembered by many on account of the new hybrid Pæony exhibited by MM. V. Lemoine et Fils, Nancy, France. It was raised from a cross between Pæonia lutea and P. Moutan. The illustration in fig. 127 represents the plant as seen at the Exhibition. Its habit of growth appeared vigorous and altogether satisfactory. The flowers were about 4 inches in diameter, with high centres, and the colour was a shade of salmon-buff, passing to yellow with age.



THE GHENT EXHIBITION.

Fig. 126.—TREVESIA SANDERI, SHOWN IN THE FIRST PRIZE EXHIBIT OF NEW PLANTS.

Stove Plants.

Tropical foliage and flowering plants, excluding Orchids, have always been one of the principal features at a Ghent Quinquennial. There was a time, the last quarter of the nineteenth century or so, when they were of most interest, when the great British houses of Veitch, Sander, Bull, and Williams competed with the Belgian leaders, Van Houtte and Linden, for the honours of the event, and the new plants they exhibited were certain to be afterwards tested as garden plants by the many amateurs who in those days were enthusiastic collectors of decorative and interesting introductions from tropical countries. Gradually popular favour has shifted from these to other classes of plants, and, although a few Belgian nurserymen still grow fine specimen Palms, Cycads, Aroids, Bromeliads, and Caladiums, to mention only a few kinds, they do it because the plants serve as an advertisement, even though they no longer occupy a prominent position among commercial plants.

Ghent has stuck to the big specimen stove plants with remarkable tenacity, but it is stated that even the Belgian growers are not disposed to keep on at it after this effort. Should this be true, it will deprive flower shows of one of their principal attractions, although, after all, shows should consist of displays of the plants that are grown and loved now, not of the plants that have had their day. Stove plants are being pushed out of favour; perhaps it would be better to say they have failed to hold their own, much the same as the specimen Cape Heaths and other hard-wooded plants have failed. There is no help for this. If one set of plants goes it is replaced by another. Tropical plants can only be cultivated successfully where there are suitable houses in which the necessary temperatures must be maintained at considerable outlay. It would not be difficult to argue that in these days the game is not worth the candle. There may be a revival of interest in tropical gardening, and no plantsman would regret it. Taste and fashion decide in this as in so many other matters. Certainly the Belgians contributed very largely towards developing and maintaining tropical plant culture.

It would be difficult to persuade one unacquainted with the vagaries of fashion in horticulture that the magnificent collections in the great annexe at the Ghent Exhibition fail to interest any except very few horticulturists, and they are of the old school. The great demand is for plants of portable size, possessed of a strong constitution, and of the right kind of decorative quality for producing certain effects. Kentia Forsteriana does all these, whereas K. Lindenii does none of them; yet the latter was, in our opinion, one of the most striking plants shown at Ghent. The red-stemmed or sealing-wax Palm, Cyrtostachys Renda, is very attractive even to the layman, but the commercial grower prefers Phœnix Roebelinii, and for the same reason Cycas revoluta has a vogue, not so much as a decorative plant, but on account of the value of its leaves in floral decorations. It is the only Cycad that is popular in gardens. The magnificent specimens of Encephalartos, Dioon, Zamia, and Macrozamia, equal to what are only to be seen in England at the Palm House at Kew, excited admiration, but they suggested the museum rather than the garden plants of the period. Of many of the remarkable specimens of Aroids, Bromeliads, Dracænas, Tree and other Ferns, showing superb culture, such as the Belgian growers excel in, it might be said they appealed to the old-fashioned idea as to what constitutes good gardening and what a stove plant should be. Few, if any of them are troublesome to grow; they are striking either in form or in coloration [illegible] characters; they represent the vegetation of the tropics; and [illegible] plant houses less than half a century ago

The principal collections were those of La Societe Anonyme Horticole Gantoise; Societe Flandria, Bruges; Societe Louis Van Houtte, Gentbrugge; M. Arthur De Smet, Ledeberg; M. Francois Spae, Melle; M. Jules De Cock, Meirelbeke; and MM. De Smet Freres, Ledeberg. All the large collections were from Belgian nurserymen, chiefly in or near Ghent. We have never seen a more imposing group of foliage plants than that shown by Societe Louis Van Houtte, which won the Van Houtte Commemoration prize for 40 specimen stove plants, foliage or flowering. They were grown in tubs, and every one was about as perfect an example of its kind as could be seen. Some of them were "made up," but only such as would not be seen to advantage if not treated in this way. Even more imposing was the group of 100 specimen plants shown by the Societe Horticole Gantoise, which won the principal prize offered by the Executive of the Exposition. Objection might reasonably be made to made-up tub specimens of Dendrobiums, Renanthera Imschootiana and other Orchids which are not suitable for the purpose.

The Palm that predominated in the mixed groups, as well as in those composed solely of it, was Phœnix Rœbelinii. Among the many Palms introduced into gardens within the last twenty-five years this Phœnix is the only one that has proved its worth for decorative use. It is effective when only a baby 6 inches or so high, and from this size to the largest grown, which are 8 feet high and about 5 feet through, it is elegant and altogether pleasing. Next to this in value among the newer Palms we should place Kentia Sanderiana.

A group of 50 specimen Crotons shown by the Societe Gantoise comprised all the leading varieties grown into big, bushy specimens, spoilt to some extent by training and pruning, still, highly praiseworthy examples of good cultivation Dracænas of the D. terminalis section were well shown by several exhibitors. The collections of tropical Aralias were good, and among them were several species that we have not seen in British gardens in recent years. There were prizes for the best Carludovica, the best Cyanophyllum, the best Philodendron, the best Maranta, the best Washingtonia, the best Sabal, the best Zamia, classes which would not be likely to draw a single entry at an English show.

Anthurium Scherzerianum was represented by well-flowered examples in plenty of variety, but the plants generally were on the small side. A. Andreanum and its hybrids were numerous, and, on the whole, good; but we did not see any to equal the wonderful collection of hybrids exhibited by the Florence School of Horticulture at Chelsea last year. The principal prize for a collection of Anthuriums in flower was awarded to a group of 100 plants shown by the Societe Gantoise. For a collection of 30 Aroids of different genera and species the Societe Louis Van Houtte received a gold medal; it contained a number of interesting species, none, however, that were not familiar to those who know garden Aroids. Caladiums were numerous and large, but they lacked colour compared with those of our exhibitions.

Pandanus Veitchii and P. Sanderiana, the only two species of any account as garden plants, were represented by large groups of well-coloured examples of convenient size

Ferns are not managed as well in Belgium as they are by the leading English growers. The most striking was a large group of beautiful examples of Adiantum Glory of Moordrecht, shown by M. Eugene Draps, Brussels. There is surely a place for this among market Ferns, as it is easily grown into elegant little specimens of a character likely to be useful in floral decorations.

Among flowering stove plants the most numerously shown were Clivia miniata, a favourite with Belgian nurserymen; Eucharis grandiflora; and, of course, Anthuriums. We missed the collections of Vriesias, Tillandsias and Bilbergias, which at former quinquennials were a feature, thanks mainly to the French specialists. We did not see a single new stove-flowering plant, such as of yore Messrs. Sander, Linden, and Van Houtte used to produce at these exhibitions.



THE GHENT EXHIBITION. [*Photograph by W. J. Vasey. Copyright.*

Fig. 127.—Pæony la lorraine; colour of flowers light salmon-buff passing to yellow.

Orchids.

The provision of a number of rooms of moderate size for displaying the Orchids prevented any wearyingly long stretches of staging, usually to be seen at the great floral exhibitions, and secured the effective display of each group to the best advantage, though the fact that the Orchids could not be seen all together to form a spectacle was criticised by some.

The plants were arranged in 12 rooms, six on the lower floor, and six in the upper galleries, three on each side. In most of the large classes there was only one entry, but where there was competition, the fact that the exhibits in the same class were arranged in different parts of the building gave the judges plenty of running about; nevertheless, the work of adjudication was finished in good time.

Speaking generally, it may be said that the

Orchids were good throughout, and showed marked advances, especially in the matter of cultivation, over the previous Ghent shows, but as regards outstanding novelties it must be remembered that wonderful strides have been made in Orchid hybridisation, even during the last five years; the standard has been raised in almost every section, and especially in the Odontoglossums.

The great Belgian amateur Orchid cultivator, M. Firmin Lambeau, Brussels (gr. M. Demunter père) was the best exhibitor from all points, and to him was awarded the chief prize, the medal presented by the King for the best and most varied collection of Orchids. This prize was awarded by the jury (*par acclamation et avec félicitations*) very justly. The fine group had a curved frontage over 50ft., and was of considerable depth. At the back were the tall spikes of Cymbidium Pauwelsii and C. insigne, with Oncidium Marshallianum, scarlet Renanthera Imschootiana, Phalænopsis, and hybrid Odontoglossums. In such a vast collection it is not possible to give an adequate account of the many treasures it contained, but we will endeavour to mention the chief features. Miltonia vexillaria and varieties and hybrids of this species were finely represented, the plants being good throughout, especially the beautiful M. vexillaria Memoria G. D. Owen, with 12 flowers, whilst M. v. gigantea, M. v. reginæ, M. v. stellata, M. Bleuana maxima and M. Hyeana were represented in fine varieties. The Odontoglossums were superb, among the best of them being the marvellous O. crispum Reine Elizabeth, which secured the first prize of a gold medal offered for the best seedling Odontoglossum crispum. It had a fine spike of very large flowers, which were white with large irregular claret-coloured blotches. Many other seedling O. crispum and hybrids were well displayed and especially good were O. c. Lucien De Cock and O. Flambeau, almost wholly of a gold-tinted claret colour. Odontiodas were splendidly shown, the gems of the collection being O. Charlesworthii Lambeau's variety, a very large flower of a rich dark bronze-red, quite a new tint; a fine form of O. Coronation, and some very showy scarlet varieties of O. Bradshawiæ. Brasso-Cattleyas were probably never so well shown or in such great variety, the older hybrids, such as B.-C. Thorntonii, B.-C. Digbyano-Mossiæ, B.-C. Digbyano-Mendelii and the crosses with Cattleya Dowiana with their varied tints of yellow and rose being in profusion. The very handsome B.-C. Princess Elizabeth (Digbyano-Mendelii × Mossiæ), with its charming rose-tinted flower of fine shape, secured the first prize for a new hybrid Orchid, and B.-C. Reneiæ, with clear, yellow-tinted sepals and petals, and B.-C. Vilmoriniana were remarkably fine. Others specially noted were the fine yellow Lælio-Cattleya Golden Glory, Cattleya O'Brieniana alba (pure white); a fine C. Robert de Wavrin, C. Luddemanniana Stanleyi, Masdevallia Veitchiana grandiflora with 16 flowers; a large brilliant red Cochlioda Chantecleer, a reversion to a better type of C. Noezliana; and Phalænopsis Artemis, a pretty hybrid near to P. intermedia, with a large branched spike. M. Lambeau, with his fine exhibits in other classes, entirely filled the room in which his chief group was staged. There were various groups of Phalænopsis, Odontoglossums, Cymbidiums, all excellently well arranged, the most noteworthy plants being the new and handsome Cymbidium Lambeauanum, a large creamy-white, rose-tinted flower with a dark red band on the lip, and which gained the first prize for an Orchid between two plants of the same genus; Cattleya Roi Albert (first prize for new hybrid Cattleya), a very large and finely formed flower; a very fine new hybrid which secured the first prize for the best hybrid Odontoglossum. O. Ville de Gand, a superb flower; a large specimen of O. luteo-purpureum, and a fine specimen of Eulophiella Elisabethæ with six spikes. The same exhibitor also secured first prizes for the finest Phalænopsis, the best Cœlogyne (pandurata), and he also staged many other remarkable plants, his combined exhibits being superior to any display previously shown by one exhibitor, if exception be made of the grand display by Sir Geo. L. Holford at the last Ghent Quinquennial Show.

M. Jules Hye de Crom, Ghent (gr. M. Cern), in a large, non-competitive display (but for which a special grand prize was awarded), may be described as next in importance to that from M. Lambeau. His grand collection of varieties of Miltonia vexillaria and hybrids was of indescribable beauty, and very interesting as showing the wide range in variation not only in the species but in the hybrids, and the curious manner in which extreme forms revert. Many of the flowers were of gigantic proportions, varying from white to deep rose, and with the coloured mask on the lip in some varieties of intense depth, and in others almost entirely absent. Miltonia Hyeana in its numerous varieties was amongst the best. The plants occupied each end of the staging, with a glass case in the middle in which the choicer forms were placed. At one end, and deservedly accorded the place of honour in a case to itself, was the superb novelty, Miltonia Madame Hye de Crom, of surpassing beauty, the flowers being snow-white with a deep bright ruby-red mask with uniformly radiating lines, at the base of the lip, and a light violet-coloured flush at the base of the petals. The plant had a charming appearance in its moss-like setting of Nephrolepis todæoides Rochfordii. A beautiful form of Cattleya Schroderæ alba, with seven flowers; the clear white C. Luddemanniana alba, the equally beautiful white C. Susannæ Hye de Crom, and other albino Cattleyas were also noted; and besides this group were staged the beautiful group of Odontoglossums for which M. Leon Hye de Crom was awarded the gold medal in Class 66.

M. Chas. Dietrich, Auderghen (gr. M. Demunter fils) staged in the class for a collection of 100 Orchids a fine lot, which secured the coveted Œuvre d'Art. In this group the forms of Cattleya Schroderæ were numerous and good, varying from white to a clear rose colour. C. S. Chantecleer was a specially distinct rose-pink form, with deep lilac-coloured lip and bronzy-orange disc. Miltonia vexillaria and M. Bleuana were well represented; so also the Brasso-Cattleyas, one named Blanc being a pretty white, with a small purple spot on the lip. Lælio-Cattleya Dominiana and other good Lælio-Cattleyas were also included.

Count Joseph de Hemptinne, St. Denis-Westrem, showed many remarkably fine plants, and all were well grown. He secured the first prize for 50 exotic Orchids with a very fine exhibit, among which were noted a fine display of Cymbidiums, with Odontoglossum Edwardii and hybrids at the back; good forms of Cattleya Schroderæ, including two white varieties, Miltonia vexillaria and hybrids, M. Bleuana nobilior being specially fine. Also a good selection of Odontiodas and various interesting hybrids, one of the best being a charming clear-white form of Brasso-Cattleya Orpheus.

The Count de Hemptinne in Class 59 secured the gold medal for the best 50 plants of Odontoglossum crispum with a beautifully grown collection; the second prize for Masdevallia with M. ephippium (trochilus), with 12 flowers, and showed an enormous specimen of Cymbidium Lowianum which was very effective on a pedestal in the centre of the room (silver medal).

British amateurs were represented by Sir Jeremiah Colman, Bart., Gatton Park, Reigate (gr. Mr. J. Collier), who secured the silver medal in Class 88 with the very large-flowered Dendrobium Lady Colman, first prize for the best Odontoglossum crispum, and a silver medal for the very fine Odontioda Bradshawiæ var. Lady Colman.

Messrs. Charlesworth and Co., Hayward's Heath, Sussex, in Class 24 (nurserymen), staged a collection which, equal to the best in quality and culture, secured the first prize (Œuvre d'Art) (*avec félicitations*). The hybrid Odontoglossums and Odontiodas were superb, and extremely beautiful and interesting on account of their remarkable variation, some of the Odontiodas being like red-blotched O. crispum, others entirely of a rich red; many with branched spikes profusely set with flowers, and some of quite new types. Of these, Odontioda Joan was a very remarkable novelty of a dark bronzy-red colour, shaped like Odontoglossum Pescatorei. Most of the great sections of hybrid Orchids were represented in this fine display, the Brasso-Cattleyas and secondary hybrids being very remarkable, Brasso-Cattleya Joan var. Rayon d'Or, a distinct shade of yellow, being specially attractive. The superseding of the old-time blotched forms of Odontoglosssum crispum by the home-raised seedling was well demonstrated in this group, the beautiful seedlings being so numerous that distinctive names are not applied to them. Beyond the intercrossing of true crispums, Messrs. Charlesworth's fine forms of O. eximium, while surpassing true crispums, make it difficult to define where the species end and the hybrids begin. Lælio-Cattleya Feronia, of a soft-apricot tint, and other yellow Lælio-Cattleyas were well in evidence, and among specially interesting plants may be mentioned a good specimen of Oncidium Clæsianum with rose-purple bronzy flowers, the remarkable Cymbidium Humblotii, Aeonia polystachya, a singular species allied to Angræcum, and Odontocidium Fowlerianum.

Messrs. Stuart Low & Co., Bush Hill Park, staged a very effective group, not for competition, but for which an Œuvre d'Art value 250 fr. was awarded. The group contained a good selection of the Orchids of the season, including their fine type of Dendrobium Wardianum. Cattleya Schroderæ, Miltonias, &c., were well displayed, the front of the group being of the yellow Oncidium concolor. Specially interesting were the pretty orange-red Polystachya paniculata from Uganda and Cymbidium Low-grinum.

M. Chas. Vuylsteke, Loochristy, Ghent, sustained his reputation as a raiser in Odontoglossums and Odontiodas, which were, as usual, shown in a case with plate-glass front extending some 30 feet. The plants contained in the case were superb and well represented their class. Five years ago M. Vuylsteke's exhibits were the sensational incident, and if Orchidists were not so enthusiastic over the recent display he has only himself and his phenomenally successful work to blame, for former successes always make the future successes more difficult to obtain. The Odontoglossums of the O. eximium and O. amabile class show great improvement, O. l'Aiglon and some others being very fine. But it is among the Odontiodas, commencing with the original O. Vuylsteke, that the work of the hybridist is most strikingly shown. Here we have improvements on all known kinds, and in all tints, one very remarkable reversion in colour, O. Blushing Bride, a clear-white rose-tinted form, having gone back to a good typical O. crispum, with some difference in shape. O. Vuylstekeæ Rubis is a bright flower with white tips, and white front to the lip. O. Pierrot is white, with a soft rose-colour on the segments, and some have entirely dark-red flowers, while the forms of the Coronation section are large and showily coloured. A special prize of an Œuvre d'Art value 500 fr. was given.

Two prominent Belgian Orchidists, namely, M. Maurice Verdonck, Gentbrugge, and M. Theodore Pauwels, Meirelbeke, played a very important part in the display, each occupying a large room entirely with their exhibits. That of M. Verdonck is most varied and interesting, as it embraces a large number of various species under their geographical distribution. M. Verdonck was awarded seven gold medals and two silver gilt, for his various collections, which comprised Class 34 (the best collection from Colombia, Venezuela, Peru, &c.), with a representative collection of Masdevallias, Cattleyas, &c.; Class 37 (collection of Indian Orchids), a very pretty group of well-flowered kinds well representing the region; Class 46, 12 Dendrobriums, all good; Class 47, 25 Dendrobriums; Class 59 (nurserymen), 50 Odontoglossum crispum, with well-grown plants of the typical form; Class 75, 50 Orchids for florists' work, the group containing good Phalænopsis, Odontoglossum, and Cattleyas.

M. Theodore Pauwels, Meirelbeke, in the room allotted to his exhibits, had for his main feature the fine group in Class 22 for the best and most varied group staged by the nurserymen, and which secured for him the Œuvre d'Art (first prize). The group was well worthy of the show, it being one of the best and most effective displays. At the back were tall and handsome plants of Cymbidium Pauwelsii, which is specially suited for such arrangements, and it contrasted well with the graceful spikes of the Odontoglossum Edwardii crosses. The Indian Dendrobiums, such as D. Jamesianum and D. Dalhousianum, showed well, so also the various

forms of D. Phalænopsis. Cattleyas, Lælio-Cattleyas and Brasso-Cattleyas were skilfully arranged with Odontoglossums, Odontiodas and various showy hybrids. Specially noteworthy were a fine specimen of Maxillaria Sanderiana, another of Cœlogyne pandurata, and one of Cymbidium Humblotii. On one side was a case of special novelties backed by yellow Oncidium Marshallianum. This contained the large white Lycaste Skinneri alba La Perle, which was awarded first prize in Class 92, and the noble Cypripedium Alcibiades Roi Albert, which won the first prize offered for the best Cypripedium. M. PAUWELS also secured the first prize for a collection of 30 Orchids with a fine lot of Dendrobiums, Miltonias, Brasso-Cattleyas, Odontoglossums, &c., and among his other exhibits should be mentioned a fine specimen of the large rose-coloured Eulophiella Peetersiana (Hamelinii), with two spikes. Odontioda Vuylstekeæ Reine des Belges, large and beautiful; a magnificent specimen of Masdevallia Harryana, covered with flowers; a fine scarlet Epidendrum radicans; the best hybrid Selenipedium with S. Schroderæ; a very fine example of S. caudatum; a good specimen of the white Trichopilia Hennisii (first prize Class 106); the richly coloured Lycaste Skinneri hellemense; and in Class 70, the best lot of Phalænopsis, a very well-deserved gold medal for the finest selection of these popular species; and first prize in Class 101 for the best Phaius.

Other noteworthy results in the scheduled classes included the success of M. EMILE PRAET in the Nurserymen's Class for 50 exotic Orchids, M. EMILE PRAET winning the Œuvre d'Art from several competitors with a well-grown collection; the second prize was awarded to MM. JANSSENS, Merxem, and the third prize to M. RENE BEHIELS VAN POECKE, St. Nicholas, M. E. PRAET also securing the second prize for a collection of 30 Orchids.

Cypripediums were poorly represented, the season being late for them. One of the best was a fine specimen of C. Daisy Barclay in M. LAMBEAU'S group. In Class 44, Cypripediums and Selenipediums, the second prize (first withheld) was awarded to Mme. A. DE SCHRYVER-BLOCK, Gentbrugge.

For 20 plants of Lælio-Cattleyas, MM. HENRI VACHEROT ET LECOUFLE, Boissy St. Léger, France, were awarded the first prize, their collection being principally L.-C. Lucie, of the yellow L.-C. Charlesworthii class; they also won the second prize for a single specimen.

M. CH. MAILLARD, St. André, Lille, France, secured the second prize for a collection of Odontoglossums (Class 60); M. L. HOORNAERT, St. Nicolas, the second prize for a collection of Phalænopsis, and second prize for the best Phalænopsis.

A disappointing exhibition was seen in Class 72, for the best and most varied lot of Vandas, Aërides, Angræcums and Saccolabium, the first prize going to M. G. VINCKE-DUJARDIN, Bruges, for forms of Vanda tricolor.

MM. JEAN VAN DE PUTTE ET CIE, Ledeberg, secured the first prize in Class 73 (Oncidiums) with a good lot of O. Cavendishianum, O. sarcodes and others; the second prize in Class 75 for 50 Orchids with a very well-arranged selection; the second prize in Class 92 (Lycaste) with a good white L. Skinneri; first for the best Oncidium, the best Sobralia (which was not fully open); and he also showed well in other classes, securing a special prize for Lycastes. Special prizes were also awarded to Dr. BALLION, Ghent, for an excellent group of Phalænopsis, Cymbidiums, Cattleyas, Odontoglossums, all showing skilful cultivation; to M. ARTHUR MUESSER, Woluwe-St. Lambert, for a fine lot of Odontoglossum crispum; and to Messrs. DUCHESNE ET LANTHOINE, Waetermael, for a good collection of over 50 plants of Odontoglossum crispum.

It remains to be said that in the floral designs and bouquets Orchids were used very frequently, and they were the best and most adaptable subjects, for with the natural grace of sprays of Odontoglossum, Phalænopsis and Oncidiums, or even in arrangements of one species alone, variety of tint and pose contribute to artistic effect.

The Azalea Hall.

THREE ACRES OF AZALEAS.

AZALEAS constituted the *pièce de résistance* of the Exhibition, and something like three acres were devoted to them in the large hall. The Azalea is the first commercial plant in the Ghent district, and probably in Belgium itself. Hundreds of acres are devoted to its culture, and hundreds of thousands of plants are raised and sold annually. The large and magnificent specimens of former years were not so much in evidence at this show, but in their place were smaller and more readily saleable plants. The Ghent nurserymen march with the times, and through their "Syndicat" they keep in touch with each other and with the outside world of horticulture.

The flowers presented a dazzling blaze of colour, varying from the most vivid scarlet, through crimson, magenta, pink, and rose to the purest white. On all sides in the great hall were flowers of the gayest tints, and many a visitor wondered whether the plants had any foliage at all upon them, so effectively was it hidden by the mass of the flowers.

One of the most successful exhibitors was M. AUG. HAERENS, of Somerghem. Time after time his name appeared as the winner of some trophy or medal, and his plants all through were a credit to his establishment. He secured the first prize of 150 francs, with the felicitations of the jury, for the finest group of Azaleas grown in any shape and size, arranged in the most decorative manner in a space not exceeding 300 square metres. The plants in this group varied from 1 foot to 4 feet across, and were trained as rounds, pyramids, and free branching specimens. In the group for 12 pyramidal Azaleas, M. HAERENS also won the first prize of a gold medal, value 50 francs, and provoked much admiration with the variety Lady Roosevelt. For 12 fan-shaped plants he secured a similar prize, although Azaleas cultivated in this style are not effective, and are apparently not so popular as when grown in other ways. A silver-gilt medal as second prize was secured for 12 double-flowered varieties, and a second prize of a gold medal, worth 100 francs, was also won for 100 novelties, while the third prize of a silver-gilt medal was awarded for 25 novelties. M. HAERENS also gained a first prize of a gold medal, value 100 francs, for the best group of 100 Azaleas in 5 varieties, with plants not exceeding 60 centimetres in diameter. The winning varieties were Vervæneana alba, Lady Roosevelt, salmon-pink, Winifred Haerens, magenta-crimson, Aug. Haerens, deep rose, and Brillanta belgica, a fine double crimson. The same grower won the first prize of a gold medal, worth 50 francs, for the best collection of 50 Azaleas trained as espaliers—a style that allows of the appearance of more foliage. For the best 50 novelties, M. HAERENS again came first, winning the gold medal, of 100 francs value, with a group that included Lente Groet, crimson, and J. D. Llewellyn, a white with somewhat irregular formation. The prize of a silver-gilt medal for 25 double-flowered Azaleas was secured by the same exhibitor, the plants being regular, and about 1½ foot high and the same across the top, Brillanta belgica being the most conspicuous variety. Other prizes won by M. HAERENS were second (gold medal worth 50 francs) for 100 bushy specimens; first (medal) for 20 plants with long flowering stems; second (gold medal) for 12 new varieties; second (medal) for 25 hybrids of "Hexe"; second (medal) for 6 varieties not yet in commerce; and first (gold medal value 50 francs) for the best varieties in commerce, and that had been exhibited as novelties before the Society during the past 25 years.

Messrs. SANDER & SONS, who are now as well known in Bruges and Ghent as they are in St. Albans, were amongst the most conspicuous and successful of exhibitors in the Azalea section. They won the second prize of a gold medal, value 200 francs, for 40 large and well-flowered specimens, with the felicitations of the jury, a really fine lot, in which M. Victor Cuvelier stood out as one of the most distinct varieties in the exhibition. The flowers are of an attractive shade of bright magenta purple, with a touch of scarlet in the centre. Messrs. SANDER secured the first prize of 150 francs value for 25 large pyramidal plants, and also took the important first prize of a work of art, value 200 francs, offered by MM. de Smet, in memory of their father, the late M. Louis de Smet. The 60 plants composing this group were conspicuously regular in outline, and so well covered with bloom that scarcely a leaf was to be seen. The plants did not exceed 50 centimetres in diameter, and at least 30 varieties were shown. For 12 of the newest varieties this firm secured the third prize, such varieties as Faust, scarlet crimson, Isabel Sander, bright rose, and Lady Veitch, double white, being particularly attractive.

Another firm very much in evidence was that of Messrs. J. B. HAERENS and HENRI WILLE, of Somerghem. They won the first prize for the newest 25 varieties—a gold medal, value 50 francs. The plants were mainly grown in 5 in. and 6 in. pots, and included Prof. Louis de Nobele, a very distinct, semi-double deep-rose coloured variety of loose habit, but one that apparently is readily scorched by the sun. Haerewille's "Pink Pearl" is a very distinct looking sport from Vervæneana. The same firm took third prize for 100 Azaleas in 5 varieties; first prize of silver-gilt medal, with the felicitations of the jury, for a fine lot of 50 double white varieties, in which Haerewille's alba was conspicuous; first prize of a silver-gilt medal for 50 double red-flowered varieties, amongst which the deep rose Madame Haerens stood out well; second prize of a gilt medal for 50 double pink-flowered varieties, composed chiefly of "Marie Antoinette," a deep rose; second prize for 25 double whites; first prize, value 100 francs (gold medal), for 100 bushy specimens; 2nd prize for 20 plants with long branches, in which the double white "Orchiphila" was noticeable; first (an Object of Art value 300 francs offered by M. R. SEIDEL), for 12 new varieties, in which Lucien de Cock, magenta crimson, Pink Pearl, and Koning Albert, deep flesh-rose were the chief attractions; second for double-flowered seedlings; and first for single-flowered seedlings that had not previously been shown before the Society; second for double varieties fixed by grafting, and not before exhibited; first for 6 not yet in commerce; and first for a double-flowered variety remarkable for good culture and freedom of flowering. This was won by a fine plant of Haerenseana with salmon-pink flowers.

Taking other exhibitors with fewer entries in the Schedule, we come to M. EUG. VERVAET-DE-VOS, of Swynaerde. He won the first prize of an Object of Art worth 150 francs for a really fine group of Azaleas in various sizes, grown on stems at least 30 centimetres high. The plants were excellently well-flowered, and amongst them were conspicuous Queen of the Whites, one of the best white Azaleas grown; and Perle de Ledeberg, another good white. Roi de Hollande, Oberst von Kutschinsky, M. J. Vervaen, and Apollo being amongst the most dazzling scarlets.

M. RENE VAN HACKE-WULTEPUTTE, of Loochristy, distinguished himself by securing the first prize for 25 fine examples grown as pyramids. These were on stems about 2 feet high, and were nearly all double flowered.

M. K. J. KUYCK, of the Société anonyme Horticole, Mont St. Amand, secured the first prize of a gold medal worth 50 francs, for 100 fine plants, in which Cocarde, deep orange-scarlet double, Schnee, a pure single white, Daybreak, flesh pink, Joseph Vervaene, deep fiery scarlet, and Blushing Bride, very pale salmon pink, were conspicuous features. The same firm took the second prize of a gold medal value 100 francs for fifty similar varieties, and the first prize for the double-flowered salmon-pink Blushing Bride, which had been fixed by grafting and had not been hitherto shown before the society.

For 50 plants on stems at least 30 centimetres high, trained in cones, and comprising at least 25 varieties, M. ALEXIS DALLIERE, Ledeberg, won the first prize of a gold medal, value 50 francs.

The SOCIETE ANONYME HORTICOLE D'HAENE, of Gentbrugge, were awarded the first prize for 50 varieties having striped or variegated flowers, single or double. These consisted chiefly of vervæneana, John Llewellyn, Imperatrice des Indes, and Prof. Walters, the prevailing colours being white, rose and blush.

Mr. J. DE CLEENE, of Loochristy, took premier honours (gilt medal) for 25 white double-flowered kinds, in which Raphael and Niobe figured largely.

Mr. HENRI WILLE, of Somerghem, took the first prize (a gilt medal) for 25 double pink flowered kinds, in which Haerewille's Pink Pearl played a conspicuous part. For 25 varieties with variegated blooms, single or double, Mme. Ve. HENRI

Dombrecht, of Mont-St.-Amand, came first with an unnamed but well-grown group.

For 25 specimens of "Hexe" the jury awarded the first prize (a gilt medal) to the Société anonyme horticole d'Haene, Gentbrugge, by acclamation. It was a nice little lot of attractive crimson colour.

For 25 varieties of "Hexe," the gold medal (value 50 francs) was won as first prize by M. Oct. Van der Cruyssen, Gentbrugge. Each variety was distinct, and the colours varied from the vivid scarlet of M. Gustav van der Cruyssen to the deep violet purple of M. Toffaert. Mendelists have a good thing in the Hexe breed, and no doubt they will take full advantage of it.

MM. de Reuse Freres, of Saffelaere, took the first prize for single-flowered varieties fixed by grafting, and not hitherto exhibited before the Society. Souvenir de Saffelaere, white, Hilda, scarlet, crimson, Purity, snow white, and De Reusseana, double white, were the chief varieties.

Other exhibitors in various classes were M. C. Verbauwen, Ghent, who won the prize offered by the groupe gantois de l'Association de la Presse Belge (an Object of Art value 150 francs) for 20 fine specimens; M. Gabriel Vervaet, Meirelbeke (a similar first prize) for a fine lot of 50 plants each about 4 feet across; M. M. Vandeweghe, Loochristy, for 50 pyramidal plants (gold medal worth 50 francs), MM. J. and H. De Schryver Freres, Loochristy, for the most varied group of 50 plants grown on stems at least 2 feet high (gold medal value 50 francs); M. Versypt, Freres et Sœur, Melle, for 50 red-flowered single varieties (gilt medal), including Fernando and Firebrand; M. Henri Haerens, Somerghem, who had a pretty little group of pyramidally-trained "Hexe" (gilt medal); while many others exhibited excellent groups which, while not for competition, added to the beauty and brilliancy of the Azalea section.

(*To be continued.*)

SOCIETIES.

ROYAL HORTICULTURAL.

April 29.—The exhibition of the Southern Section of the National Auricula and Primula Society was held in conjunction with this fortnightly meeting of the R.H.S. at the Vincent Square Hall, and attracted a large attendance. Besides the competitive plants, several trade growers exhibited collections of Auriculas and Primulas. Other features of special interest were Roses, Daffodils, and Hippeastrums.

The Orchid Committee granted one Award of Merit.

The Floral Committee awarded 26 Medals and 4 Awards of Merit to novelties and exhibits. The Narcissus Committee awarded Medals and 2 Awards of Merit.

Floral Committee.

Present: H. B. May, Esq. (in the chair), and Messrs. Charles Blick, G. Reuthe, W. P. Thomson, Chas. E. Pearson, H. J. Jones, Wm. Bain, J. W. Moorman, Thos. Stevenson, R. C. Notcutt, J. W. Barr, C. R. Fielder, W. J. Bean, W. A. Bilney, John Green, Chas. T. Druery, John Dickson, C. Dixon, W. Cuthbertson, W. J. James, Chas. E. Shea, J. F. McLeod, R. C. R. Nevill, Wm. Howe, E. H. Jenkins, and B. Crisp.

Awards of Merit.

Aethionema armenum var. Warley hybrid.—A sub-shrubby Alpine, about 6 inches high, covered freely with bright pinkish flowers. The main growths are prostrate, but bushy, wiry ascending branches rise freely from them, carrying numerous linear, grey leaves. As compared with the typical A. armenum, the hybrid is more erect, more bushy and vigorous, and a week or more earlier in flowering. The colour of the bloom is very pale violet-rose, 154 of the *Répertoire de Couleurs.* Shown by Miss [illegible]mont.

Primula La Lorraine.—A vigorous hybrid Primula, the plant exhibited having five spikes of rich, purplish-rose flowers, as much as an inch and a half in diameter and having a small yellow-rimmed thrum eye. This is one of M. Lemoine's hybrids derived from P. cortusoides amœna × P. Veitchii. The foliage has a marked resemblance to the latter parent in shape and downiness, but it is a much paler green. One of the spikes carried two tiers of flowers, and the plant will make a splendid decorative subject for the greenhouse. It is claimed that the plant will prove hardy in the rock garden. Shown by Mr. Maurice Prichard.

Rose Erna Teschendorff.—A dwarf Polyantha variety, with the foliage and habit of Mme. N. Levavasseur, from which it is a sport, but with bright carmine-crimson flowers, with a faint tinging of purple, as grown under glass. It will naturally be compared with Jessie. The growth is stronger, reaching 2-2½ feet, and the flowers are larger, fuller and darker than that variety. It is said to stand sun well out of doors, and the petals will probably develop a deeper colour in the open, but its value as certificated is clearly as a forced pot-plant. Raised by Mr. Teschendorff (Dresden) and shown by Mr. W. Profittlich, Twickenham.

Wallflower Primrose Monarch.—Practically the only pale yellow wallflower in cultivation is Primrose Dame, and Monarch represents a great advance on that variety. The flowers are bright lemon as they open, and fade to sulphur. Blooms measured 2 inches in diameter on plants lifted from the open field. The buds are crimson tinted. The plants shown had an unbranched "stock"-like habit. Shown by Messrs. J. Moss & Son, Kelvedon.

Orchid Committee.

Present: J. Gurney Fowler, Esq., in the chair, and Messrs. Jas. O'Brien (hon. sec.), R. Brooman White, J. Wilson Potter, W. Cobb, R. G. Thwaites, T. Armstrong, J. Charlesworth, J. Cypher, J. E. Shill, A. Dye, W. H. White, W. Bolton, C. J. Lucas, Gurney Wilson, and Sir Jeremiah Colman, Bart.

AWARDS.

Award of Merit.

Odontoglossum amabile Zeus (*crispum* × *crispo-Harryanum*), from Lieut.-Col. Sir G. L. Holford, K.C.V.O. (gr. Mr. H. G. Alexander). A charming Odontoglossum, with large, broad-petalled flowers of a clear white, the inner halves of the petals closely spotted with reddish purple, and the petals having a large red-purple blotch, with radiating lines at the base. Lip white, with yellow crest and dark purple blotch.

Cultural Commendation.

To Mr. W. H. White, gr. to Sir Trevor Lawrence, Bart., K.C.V.O., for a fine specimen of Epidendrum leucochilum, with six spikes having eight to fifteen flowers each. An ornamental species from New Granada, introduced about seventy years ago. The drooping racemes have flowers with greenish sepals and petals, and prominent pure white lip.

Narcissus Committee.

Present: W. T. Ware, Esq. (in the chair), Miss Willmott, Messrs. W. R. Cranfield, H. V. Warrender, C. Bourne, F. Barchard, W. Goldring, W. A. Milner, F. Herbert Chapman, J. D. Pearson, G. W. Leak, P. Rudolph Barr, R. W. Wallace, W. Poupart, Joseph Jacob, and Chas. H. Curtis (hon. secretary).

Awards of Merit.

Evangeline.—A lovely Leedsii Daffodil, with flowers set at right angles to the stem, showing the pure white perianths and pale primrose cups to advantage. Shown by Mr. Phillips.

Venetia.—An exquisite pure white Triandrus seedling of large size and good form. There were two flowers on most of the stalks. Shown by Mr. W. B. Cranfield.

Fruit and Vegetable Committee.

Present: A. H. Pearson, Esq. (in the chair), and Messrs. Jos. Cheal, G. Reynolds, J. Jaques, J. G. Weston, A. Bullock, H. H. Williams, E. Beckett, Geo. Woodward, W. Bates, and A. R. Allan.

Messrs. Jas. Carter and Sons, Raynes Park, were the only exhibitors of vegetables. Their extensive collection comprised baskets of excellent Broccoli, Carter's Champion and Carter's Mammoth White, Early Long Forcing Turnip, French Bean Magpie, Carter's Forcing Pea, and many other vegetables and crisp, fresh saladings (Silver-gilt Knightian Medal).

MARKETS.

COVENT GARDEN, April 30.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general averages for the week preceding the date of our report.—Eds.]

Cut Flowers, &c.: Average Wholesale Prices.

	s.d.	s.d.
Anemone, St. Bridget, per doz. bunches ...	3 0	—
Arum (Richardias)	3 0-	4 0
Carnations, per dozen blooms, best American varieties ...	1 6-	2 0
— smaller, per doz. bunches...	12 0-	15 0
— Carola (crimson), extra large	2 0-	3 0
— Malmaison p. doz. blooms:		
— — pink	6 0-	8 0
Daffodils, per doz. bunches:		
— Barrii	1 6-	—
— Emperor ...	1 6-	2 0
Eucharis, per doz.	3 0-	—
Forget-me-nots, per doz. bunches	3 0-	4 0
Gardenias, per box of 15 and 18 blooms... ...	1 6-	2 0
Gladiola, The Bride	12 0-	15 0
— Blushing Bride	8 0-	12 0
— Peach Blossom	10 0-	12 0
Iris, Spanish, per dozen bunches	8 0-	12 0
Lilium auratum, per bunch ...	4 0-	4 6
— longiflorum, per doz.. long	3 6	—
— — short ...	3 0	—
— lancifolium album, long ...	2 0	—
— — short ...	2 0-	1 0
— — speciosum		
— rubrum, per doz., long ...	2 0	—
short ...	1 0-	1 3
— candidum, per bunch. long ...	1 9-	2 0
per doz. short	1 3-	1 6
Lily of the Valley, per dozen bunches:		
— extra special..	18 0-	21 0
— special... ...	15 0	—
— ordinary ...	10 0-	12 0
Mignonette, per doz. bunches ...	4 0-	5 0
Narcissus Poeticus	2 0-	2 6
— double white...	8 0-	10 0
Orchids. Cattleya, per doz. ...	10 0	—
— Cypripedium	3 0	—
— Odontoglossum crispum ...	4 0	—
Pelargoniums per dz. bunches White... ...	5 0-	6 0
Double Scarlet	8 0-	12 0
Roses: Catherine Mermet ...	2 0-	3 0
— CountessDerby	—	—
— Frau Karl Druschki	2 0-	3 0
— Général Jacqueminot ...	1 0-	1 6
— Joseph Lowe..	2 6-	3 0
— Kaiserine ...	1 6-	3 0
— Lady Hillingdon	1 6-	2 6
— Liberty ...	1 6-	4 0
— Madame A. Chatenay ...	1 6-	3 0
— Maréchal Niel	1 6-	2 6
— Niphetos ...	1 6-	2 0
— President Carnot	2 0-	2 6
— Prince de Bulgaria	3 0-	4 0
— Richmond ...	1 6-	3 6
— Rose Queen ...	3 0-	4 0
— Sunburst ...	3 0-	5 0
— Sunrise	1 0-	1 3
Spiræa, per doz. bunches ...	6 0-	8 0
Stephanotis, per 7z spray	2 6-	3 0
Sweet Peas, per dozen bunches:		
— white ...	2 0-	3 0
— coloured ...	2 0-	3 0
Tulips, per dozen bunches:		
— white ...	6 0-	10 0
— Darwin, all shades	12 0-	15 0

Fruit: Average Wholesale Prices.

	s.d.	s.d.
Apples, French Russets, box ...	10 6-	11 6
— Canadian, brls.	16 0-	25 0
— Wenatchee, p. case	7 6-	10 6
— American, brls.	26 0-	36 0
— American Newtown Pippin, barrel	36 6	—
— Californian Newtown Pippin, per case ...	7 0-	8 6
— Nova Scotian, per barrel ...	15 0	16 0
— Oregon, Newtown Pippin, per case ...	9 6-	10 6
— Australian and Tasmanian		
— Australian case	8 0-	12 0
— Cox's Orange Pippin, cases...	18 0-	20 0
— Tasmanian ...	6 0-	9 0
Bananas, bunch:		
— Doubles ...	8 6-	11 0
— No. 1	7 0-	8 0
— Extra	9 0-	10 0
— Giant	12 0-	14 0
— Loose, p. doz.	0 6-	1 6
— Red coloured...	4 6-	5 6
— Jamaica, pr ton	£9-	£12
— Jamaica Ordinary, per box (9 doz.)... ...	5 0-	5 6
Dates, per dozen ...	2 9-	3 0
— Egyptian, cwt.	25 0	—
Cranberries, p. case	9 0	9 6
Green Figs ...	4 0-	12 0
Grape Fruit, case:		
— 96's		
— 80's	8 0-	20 0
— 64's		
— 54's		
per dozen ...	4 0-	6 0
Grapes:		
— Almeria, barrel	22 6-	25 0
— Almeria, per doz. lbs.	8 6-	10 0
— English: —		
Canon Hall Muscat... ..	8 0-	12 0
Muscat of Alexandria... ...	4	
Grapes, *continued*—		
— English, per lb.	2 6-	5 0
— Belgian, per lb.	2 0-	3 0
— Cape, White, box	6 0-	8 0
— Black, box ...	10 0-	15 0
Limes, per case ...	5 0-	6 0
Lemons, Messina, per case ...	9 6-	24 0
Palermo, box	10 0-	—
Lychees, 1 lb. box	1 6	—
Mangoes, Cape, dz.	6 0-	8 0
Melons English, each	1 6-	5 0
Nuts, Almonds, bag	52 6-	—
— Brazils, cwt. ...	54 0-	62 0
— Spanish, sack	40 0-	42 6
— Barcelona, bag	35 6-	36 0
— Cocoanuts, 100	18 0-	23 0
— English Cobs, per lb.	0 3-	0 4
— Chestnuts, bg.	14 0-	26 0
— Walnuts, French, p. cwt.		
— Naples, p. cwt.	64 0	—
Oranges:		
— Tangerines ... (96s.) box	6 6	—
— Seville, sours, case	18 0-	20 0
— Messina, bitters, case ...	8 0-	9 6
— Jaffa, per case	8 6-	9 0
— Murcia... ...	10 0-	11 6
— Denia, per case	14 6-	34 6
— Palermo Blood	6 0-	7 0
Peaches, English, dozen	6 0	36 0
— Cape, box ...	10 0-	15 0
— Belgian, dozen	9 0-	18 0
Pears:		
— Cape, box ...	5 0-	6 0
— Tasmanian, case	10 0-	15 0
— per bundle of 3 boxes... ...	12 0-	18 0
Pineapples, St. Michael ..	2 0-	4 0
Plums, Cape, box	4 0-	7 0
Rhubarb, doz bndl.	1 6	
— Natural, tally	8 0	10 0
[illegible] lb.	2 6-	5 0
[illegible] quality	1 0-	2 0

Cut Foliage, &c.: Average Wholesale Prices.

	s.d.	s.d.
Adiantum Fern (Maidenhair), best, per doz. bunches ...	5 0-	6 0
Agrostis (Fairy Grass), per doz. bunches ...	2 0-	4 0
Asparagus plumosus, long trails, pr. ½doz.	1 6-	2 0
— medium, doz. bunches ...	12 0-	18 0
— Sprengeri ...	10 0-	12 0
Berberis, natural, per doz. bnchs.	3 0-	4 6
Carnation foliage, doz. bunches...	3 0	—
Croton foliage, various, dz. bnchs.	12 0-	15 0
Cycas leaves, artificial, per doz.	3 0-	12 0
Eulalia japonica, per bunch ...	1 0-	1 6
Moss, gross bunches	6 0	—
Myrtle, doz. bnchs. (English), small-leaved ...	6 0	—
— French... ...	1 0	—
Smilax, per bunch of 6 trails ...	2 0-	2 6

Vegetables: Average Wholesale Prices.

	s.d.	s.d.
Asparagus, Giant, per bundle ...	7 0-	8 0
— English, per bundle... ...	4 0-	7 0
— Small bundles	0 5-	0 6
— Paris green	2 3-	2 6
— Sprue, bundle	0 5-	0 6
— Lauris	1 9-	2 6
— Cavaillon ...	0 9-	10
— Victoria ...	3 0-	3 6
— Toulouse ...	1 9-	2 0
— Dijon	1 0-	1 6
Artichokes (Globe), per dozen ...	2 0-	—
— ground, ½ bus.	1 6	—
Batavia, per doz....	2 0-	—
Beans:		
— Guernsey, lb.	0 8-	1 0
— English, per lb.	0 8-	1 0
— French, brd. pad	4 0-	4 6
Beetroot, p. bshel.	1 0-	2 0
— bags	3 0-	3 6
Broccoli, bushel	1 0-	1 6
— bags	1 9-	2 0
— Heads, p. hmpr.	3 0-	6 0
Cabbages, p. tally	4 0-	—
— per doz. ...	1 0-	1 6
— Cornish pr. crate	5 6-	6 6
Carrots (English) pr. doz. bun....	9 0-	10 0
— French, dozen		
— Round	8 0-	9 0
Carrots, Long ...	6 0-	6 6
— per pad ...	3 0-	3 6
— unwashed, per bag ...	2 0-	2 6
— washed, bag ...	3 0-	—
Cauliflowers, per tally	10 0-	15 0
— per dozen ..	3 0-	3 6
Celeriac:		
— French, p. doz.	4 0-	4 6
Chicory, per lb. ...	0 3½-	0 4
Cucumbers, per dozen	2 6-	4 6
Endive, per dozen	1 0-	1 6
— French, p. doz.	1 8-	2 0
Greens, per bushel	1 0-	1 6
— bags	2 0	—
Garlic ... strike	2 6	—
Horseradish, 12 bundles ...	10 0-	12 0
Leeks, per doz. ...	2 0-	2 6
Lettuce, French, Cos, per dozen	5 6-	6 6
— English, Cos, per doz. ...	1 6-	2
Lettuce, English round, p. doz.	1 3-	1 4
— Dutch, p. doz.	1 0	—
Mint, per dozen bunches ...	4 0-	6 0

Vegetables: Average Wholesale Prices (cont.)

	s.d.	s.d.
Mushrooms, cultivated, per lb.	0 10-	1 3
— Broilers ...	0 8-	1 0
Mustard and Cress, per doz. punnets	0 10-	1 0
Onions (English), per bag ...	3 9-	4 0
— per bushel ...	1 6-	2 0
— picklers, per ½ bushel ...	2 6-	3 0
— (spring), per doz. bunches...	2 0-	2 6
— (Spanish), case	4 6-	5 6
— Dutch, bags ...	3 6-	—
— Egyptian, bags	6 6	—
— — cases ...	7 6	—
Peas, English p. lb.	0 10-	1 3
— French, pad of 10 lb. ...	5 0-	6 0
— Guernsey, p. lb.	0 9-	1 0
Parsley, per doz. bunches ...	2 0-	2 6
Parsnips, per bag	2 0-	2 6
— per bushel ...	1 6-	—
Radishes (French), per dozen ...	1 6-	1 9
— English, p. doz.	1 0-	1 6
— Guernsey ...	0 9-	1 0
Sage, per dozen ...	2 0	—
Seakale, punnets ...	10-	1 0
— outdoor, box, 12 lbs.	2 0	2 6
Spinach, p. bushel	2 0-	2 9
Scotch Kale, bushl.	1 0-	1 3
Tomatos, English, per lb.	0 10-	1 0
— Guernsey p. lb.	0 9-	0 10
— Canary, p. bdl.	12 0-	16 0
Thyme, per dozen bunches ...	1 6-	2 0
Turnips (English), per dozen bunches ...	3 0-	3 6
— bags	3 0	—
French, long, dozen	6 0-	7 0
round, dozen ..	5 0-	6 0
— unwashed, bag	2 0-	2 6
Watercress:		
— dozen	0 4-	0 6

REMARKS.—Shipments of Australian and Tasmanian Apples received this week amounted to about 14,000 cases, the bulk consisting of dessert varieties, including the popular Cox's Orange Pippin; there were also a few cases of Pears of the varieties Vicar, Beurré Bosc, Beurré Clairgeau, Beurré Capiaumont, Beurré D'Anjou and Beurré Diel. Pears from the Cape include Glout Morceau, Winter Nelis and Doyenné Comice. Plums were also included in the shipment. Cape fruit will be finished shortly. English, Guernsey and Belgium Grapes are an increasing supply. Forced Strawberries are obtainable in much larger quantities, the berries showing an improvement all round. A few good fruits of Peaches are obtainable from home and Belgian growers. Supplies of Figs and Melons are increasing daily. English and Guernsey Tomatos are more plentiful. Teneriffe Tomatos continue to arrive in a very good condition. Mushrooms have been a good supply and have sold freely. Beans and Peas from the Worthing and Guernsey districts may be had in larger quantities. Vegetable Marrows and Cucumbers are plentiful. Asparagus is arriving from Norwich, Cambridge, Evesham, Middlesex and the Continent. Supplies of ordinary Vegetables are more than equal to the demand with the exception of best Cauliflowers and best Cabbage.—*Edgar H. Rides, Covent Garden, April 30, 1913.*

Potatos.

	s.d.	s.d.		s.d.	s.d.
Blackland, per cwt.	3 9-	4 0	Belgian, per bag	4 0	5 0
Evergood ,,	3 9-	4 3	German ,,	4 0-	5 0
King Edward ,,	4 6-	5 3	Dunbar ,,	5 6-	6 9
Dutch, per bag ...	3 6-	4 0	Scotch (grey soil) ,,	4 6-	5 3

REMARKS.—Trade is very slow, and prices are inclined to be a little easier. There are still large stocks in the London markets, but the tubers are mostly Scotch and foreign-grown. A few new Potatos are arriving this week from Jersey.—*Edward J. Newborn. Covent Garden and St. Pancras, April 30, 1913.*

THE WEATHER.

THE WEATHER IN WEST HERTS.

Week ending April 30, 1913.

Warm, wet, and gloomy.—Throughout the past 12 days there has occurred only two unseasonably cold days, and but two cold nights. During that period the temperature in the thermometer screen has on four days risen to or above 64°, and on four nights the exposed thermometer did not fall below 42°. At 2 feet deep the ground is now 1° warmer, and at 1 foot deep 3° warmer, than is seasonable. Some rain has fallen on all but two of the last 20 days, and to the total depth of 2¾ inches. During a severe thunderstorm which occurred on the evening of the 29th, ½ inch of rain was deposited. Of the 2¾ inches of rain mentioned, above 6 gallons have passed through the percolation gauge on which short grass is growing, and 6½ gallons through the bare soil gauge. The sun shone on an average for 4½ hours a day, which is an hour a day short of the usual duration for the end of April. On one day the sun was shining brightly for 10½ hours, but on two other days less than an hour's sunshine was altogether recorded. The winds proved at times rather high, but in no hour did the mean velocity exceed 16 miles—direction S.S.E. The average amount of moisture in the air at 3 p.m. exceeded a seasonable quantity for that hour by 7 per cent. A Blenheim Pippin Apple-tree growing in my garden came first into blossom on the 29th, or a week earlier than its average date of first flowering in the previous 27 years, but six days later than last year. *E. M., Berkhamsted, April 30, 1913.*

GARDENING APPOINTMENTS.

Mr. A. Kett, for the past two years Gardener to F. Penn, Esq., Hardres Court, Canterbury, as Gardener to the same Gentleman at Bifron's Park, Canterbury, Kent.

Mr. Wm. Swan, for the past 14 years Gardener to Sir Edward Clarke, K.C., Thorncote, Staines, Middlesex, as Gardener to H.H. the Jam Sahib of Nawanagar (Prince Ranji Singhi), who has recently purchased the estate. [Thanks for 2s. 6d. for R.G.O.F. box.—Eds.]

Mr. Arthur Springham, previously gardener to A. C. Castle, Esq., North Cote, Westbury-on-Trym, as gardener to Ivor Vachell, Esq., Highmead, Cardiff.

Mr. E. Belton, for the past three years foreman at Fairlawn Gardens, Totteridge, N., as gardener to Ellis Hill, Esq., Sydenham, New Barnet.

Answers to Correspondents.

Apple Twigs Diseased: *Miss P.* The trouble is due to scab disease. Remove the infected shoots and spray the plants with the Bordeaux mixture at half the usual strength.

Beans Diseased: *B. K.* and *H. B.* The roots are corroded by Rhizoctonia, a soil fungus. Watering with dilute nitrate of soda might help the present crop, but the soil should be sterilised by steam, or by heating, before anything else is planted.

Correction. Owing to a printer's error the amount of superphosphate recommended on p. 280 for perennials was printed 5lb. per square yard instead of 5lb. per square rod.

Darwin Tulips Diseased: *H. C.* The "Lily" disease is present. The bulbs should be destroyed, and the same land should not be planted with Lilies for some time to come.

Figs Diseased: *Ficus.* The Figs are attacked with Cercospora Bolleana. All diseased leaves and fruits should be collected and burned, and the trees sprayed with diluted Bordeaux mixture, which will check the complaint. Where the disease is very bad it is best to root up and burn the trees, afterwards planting new stock in fresh soil.

Iris trojana: *R. D. M.* This species is very rare, and, so far as we are aware, plants cannot be obtained from nurserymen. The material for the plate in Mr. Dyke's work *The Genus Iris*, was obtained from the Vienna Botanic Garden.

Melon Plants: *Anxious.* Do not stop the leading shoots of the individual plants until they have nearly reached the top wire of the trellis, the object being to obtain a good crop of fruit evenly distributed over the plants. This can be accomplished by pinching out the first flowers that show on the laterals proceeding from the base of each plant, trained to the first set of wires. Thus treated, the trees will produce side shoots from the base of each leaf-stalk freely and regularly. Superfluous growths should be pinched at one joint from the main stem. Train the shoots at about fifteen inches from one another on either side anglewise, and when they have made two or three joints stop the shoots. When five or six flowers are open on a plant pollinate them, choosing a time when the atmosphere is dry. Stop the fruit-bearing shoots at one joint beyond the fruit, and, when it can be seen which will swell, remove all superfluous ones, leaving from four to six melons to form the crop. All superfluous growths and flowers should be kept persistently pinched to prevent overcrowding of the shoots, and needless exhaustion of the plants. With judicious treatment the plants may be kept clean and vigorous to the end, and a second crop of fruit may be secured by setting a fresh batch of flowers after the fruits forming the first crop have attained to half their full size. This will not in any way interfere with the size and quality of the fruit of the first crop.

Names of Plants: *A. K.* 1. Chlorophytum elatum variegatum. 2. Tradescantia navicularis. 3. Anacampseros filamentosa. 4. Helxine Soleirolii. — *J. B.*, Falfield. Luzula maxima.—*R. H. S.* 1, Diervilla rosea; 2, Veronica Traversii; 3, Sedum altissimum; 4, Saxifraga decipiens grandiflora; 5, Rosmarinus officinalis; 6, send when in flower.—*H. A.* 1, Rubus spectabilis; 2, Potentilla alba; 3, Cytisus monspessulanus; 4, Chrysosplenium oppositifolium; 5, Cytisus purgans; 6, Cratægus Pyracantha; 7, Aconitum, sp. probably A. Napellus.—*Devon.* We cannot undertake to name varieties of Narcissus. Send them to some grower who will compare them with his own flowers.—*Buchlynie.*—Sequoia sempervirens (the Redwood of California).—*June.* 1, Skimmia japonica; 2, Kerria japonica fl. pl. 3, Abies Pindrow; 4, Ribes alpinum; 5, Phillyrea media.—*Marlow.* Psoralea pinnata, a beautiful greenhouse shrub.—*G. W. H.* Roses 1, François Crousse; 2. Reine Olga de Wurtemburg; 3, Pink Rover.—*Herts.* Clianthus puniceus, Parrot's Bill.—*H. T.* 1, Cœlogyne odoratissima; 2, Masdevallia simula; 3, Oncidium triquetrum; 4, Oncidium tetrapetalum; 5, Eria convallarioides.—*E. S. R.* 1, Dendrobium Bronckartii; 2, Broughtonia sanguinea; 3, Ionopsis paniculata.

Public Park Superintendents: *V. B.* The addresses of the superintendents of the principal public parks are given in the *Horticultural Directory*, which can be obtained from our publishing department; price 1s. 3d. post free.

Rhododendron Leaves Disfigured: *H. Reynolds.* No disease is present in the Rhododendron shoots submitted for examination. The discoloration is due to injury by frost. Young, vigorous shoots are very susceptible to injury by cold winds or frost. In a year or two the plants will grow less freely, the wood become firmer, and the discoloration will cease.

Seedling Thrift: *J. H.* Send us a specimen for examination.

Tomatos: *E. K.* The disease is due to a lack of nitrate of potash in the soil. Soak the roots with water containing 1 oz. of nitrate of potash per gallon.

Tomatos and Schizanthus: *F. R.* No disease is present on either leaf. The trouble is due to the cultural treatment afforded the plants.

Tomatos Unhealthy: *J. M.* There is no disease present to account for the failure of the plants.

Tulips: *H. S. E.* There is no disease present, the failure is due to some unsuitable condition that can only be determined by those on the spot.—*A. J. C.* The Tulips are affected by "Yellow stripe," a bacterial disease. The soil should be treated with quicklime or Vaporite.

Vine Leaves: *H. C.* The injury has been caused by a chill, and there is no indication of disease.

Weeds on Ponds: *C. W. T.* See reply to J. H. J. in the last issue, p. 280.

Communications Received.—H. Evans—F. H. B. B.—T. E. W.—A. C. B.—R. J. W.—J. H. T.—W. G. S.—W. P. W.—P. W.—M. G.—Mum—M. and R. L. Co., Washington—E. S. R.—F. H. B. B.—J. F.—W. G.—T. H. R.—J. D. P.—A. P. G.—J. E. C.—E. F.—W. C. S.—D. Bros.—G. D.—W. K.—J. H.—C. W. T.—R. J. A.—H. L.—A. H.—A. K.

THE
Gardeners' Chronicle

No. 1,376.—SATURDAY, May 10, 1913.

CONTENTS.

Agricultural education	311
Anemone alpina ...	313
Anemone blanda scythinica	312
Books, notices of—	
Herbals: Their Origin and Evolution ...	304
"The Botanical Magazine"	311
The Genus Eucalyptus	305
The Story of a Loaf of Bread	310
Trees in Winter ...	305
Chrysanthemums, sulphur for	312
Colonial note—	
Cinnamon culture in Ceylon	307
Davidia involucrata flowering at Kew Gardens	311
Gardening Eldorado, a	311
Ghent International Exhibition	313
Iris bucharica	313
Kew Gardens, storm at	311
Kew Guild Dinner, the	311
Kew notes—	
Hardy Heaths ...	304
Prunus Avium ...	304
Ulex europæus var. flore pleno	304
Kirby, Mr. A. H., appointment of	311
Maitland, Mr. T. D., appointment of ...	311
Market fruit garden, the	301
Mayne, Mr. J.	311
Obituary—	
Hindmarsh, W. T. ...	319
Robbie, Archibald ...	319
Späth, Franz Ludwig	319
Orchid notes and gleanings—	
Orchids at William Bull & Sons' Nursery	303
Pea thrips	313
Potatos, Bordeaux mixture for	311
Rhodochiton volubile ..	310
Rhododendrons, injury to	313
Rock garden, the—	
Cytisus Ardoinii ...	306
Rock plants, a new method of growing ...	312
Rosary, the—	
Cultural hints ...	302
Rose Ellen Poulsen...	302
The Rose annual ...	302
San Francisco, International Show at ...	311
Seed-testing station, proposed national ...	306
Societies—	
Edinburgh Botanical	316
Horticultural Club ...	311
Manchester & North of England Orchid	315
Manchester Royal Botanical and Horticultural	311
Midland Re-afforesting Association ...	311
National Rose ...	316
National Auricula and Primula ...	317
Royal Horticultural	314
Scottish Horticultural	316
United Horticultural Benefit and Provident	316
Soil, sterilising	313
South, Mr. F. W., appointment of	317
Sunshine recorders ...	306
Week's work, the—	
Flower garden, the ...	308
Fruits under glass ...	309
Hardy fruit garden, the	309
Kitchen garden, the...	309
Orchid houses, the ...	308
Plants under glass ...	305

ILLUSTRATIONS.

Azaleas, an exhibit of, at the Ghent Exhibition ...	307
Flower beds, plan of	319
Hydrangeas at the Ghent Exhibition	305
Rhodochiton volubile (Coloured supplementary illustration)	
Rhododendrons at the Ghent Exhibition	312
Rose Ellen Poulsen	302
Späth, Franz Ludwig	319
Stove foliage plants, an exhibit of, at the Ghent Exhibit on	304
Weevils, clay-coloured and black	320
View in the Conservatory at Messrs. Bull & Sons' Nursery	303

THE MARKET FRUIT GARDEN.

FOLLOWING a rainy March, we have had one of the wettest of Aprils. My own measurement of rainfall for the month is 3.75 inches, and this has been exceeded in many districts. Taking days of twenty-four hours into consideration, there were eighteen rainy days, and they were so distributed over the month that there was never a dry interval of more than two days. In such circumstances, the land has been kept constantly in a wet condition, and there are heavy arrears of sowing, Potato planting and hoeing in nearly all parts of the country. Small seedlings and Peas have been devoured by slugs to a great extent, where they did not rot in the ground.

For more than six weeks I have been endeavouring to destroy weeds by horse and hand hoeing, and over and over again they have been reset by rain. In two plantations cultivated by horse power and hand-hoed twice the tufts of grass are growing all over the land. This is discouraging to the lover of clean orchards, and it implies a great waste of time and money. The only consolation is that there has been immunity from severe frost.

Insect Pests.

For some unknown reason, insect pests are troubling me at present much less than usually. It is many years since I found so few Apple suckers. Most varieties of Apples in my orchards are almost free from this enemy, and many are nearly exempt from the attacks of aphides and caterpillars. It would be interesting to learn whether this comparative immunity is general or not. If it is not so, perhaps persistence in destroying the pests for years past is meeting with a fitting reward. But it may be that suckers and aphides hatched prematurely during the mild winter or in March, were killed by frost. Or, again, spraying with a strong solution of lime-sulphur just before the buds burst may have done something in coating over eggs or destroying mother queen aphides. It is too early, however, to assume that the comparative immunity will continue. There can hardly be a bad attack of the sucker after this; but the aphis and the caterpillar have plenty of time during which to appear in strong force. Already the hope that Plums would escape the usual infestation of aphis has been disappointed. On April 24 no attack could be observed on any but two varieties; but on the 29th there were aphides on all. As the leaves are curled over the pest, spraying would be a mere waste of time and money.

The First Summer Spraying.

Owing to the partial immunity of Apples from insect pests, the usual spraying before the expansion of blossom was to a great extent dispensed with, only varieties which were badly attacked by aphis, sucker, or caterpillar, or all three pests being sprayed. This was a great relief, and it is not by any means certain that it might not have been extended to all varieties without any bad results. For on every occasion rain fell a few hours after the spraying was done, probably washing most of the spray fluid off the trees, and off the insects that had been wetted by it. There was no question of waiting for settled fine weather, as the work had to be done before the expansion of the blossom. Arsenate of lead was combined with the soft-soap wash for aphis and sucker, in order to poison the food of caterpillars. If pests should attack the varieties not sprayed, they will be treated after the fall of the blossom, and in any case varieties subject to scab will be sprayed with lime-sulphur of summer strength.

Results of Spraying.

One of the most unsatisfactory features of spraying is the difficulty of determining its results, and that difficulty has proved particularly great this season. Even in the cases of Apples most infested, such as those in which five or six out of twenty trusses of blossom were found to contain aphides, and three or four a few suckers, I could not find more than one dead aphis or sucker in fifty trusses examined a day or two days after the spraying. I found more live ones, but very few even of these. The question, then, is whether the pests, killed or weakened by the wash, were washed out of the trusses by heavy rain. It is commonly assumed that aphides are washed off the trees by rain, and particularly by a thunderstorm; but, so far as I know, this is an assumption which has never been actually proved. Some trusses found to be infested by aphides could be labelled, some of them being sprayed and others not sprayed, care being taken to avoid any more thorough spraying than would be given on a large scale. If the insects could be counted beforehand, so much the better. Examination could be made twenty-four hours after the spraying, results being noted; and again after the next fall of rain, if it occurred soon enough. Rain might hold off too long, and the experiment would then have to be repeated. In noting the results after rain, if any pests were found to have been washed off the trees, it should be noticed whether more were ousted from the sprayed trees than from the others. As to a thunderstorm, there can hardly be any special effect from it, unless the rainfall happens to be more violent than in an ordinary storm, as it is not at all likely that a specially electrical condition of the atmosphere affects the aphis. A busy fruit-grower can hardly find time for such experiments as are suggested. They should be carried out by the authorities paid out of public funds to undertake research. As matters stand, I do not know whether the expense incurred in spraying has been useful or almost useless. There is too much reason to fear that the arsenate of lead has been all, or nearly all, washed off the trees by rain, and that the caterpillars will be able to go on feeding with impunity. They, like the other pests, were in the trusses of blossom buds and the surrounding leaves.

Fruit Prospects.

There are now good shows of Gooseberries and Red Currants, and Black Currants are promising. Plums appear to have set fairly, although from the masses of blossom a considerable dropping of abortive specimens was inevitable. Pears have set particularly well. On the whole, there is a good display of blossom on Apple trees, though some varieties have disappointed expectations raised before the fruit buds burst, as a large proportion of these buds have developed clusters of leaves only. Cox's Orange Pippin is specially remarkable in this way. The trees were thickly studded with fruit buds, and yet there is only a sprinkling of blossom on the majority of them, while many are quite devoid of blossom. This is also the case with Allington Pippin, Lord Grosvenor, and Early Julyan, trees which bore well last year being entirely or nearly devoid of blossom. All three, as they grow to mature age, are among the varieties which fruit only in alternate seasons. This alternation of fruitfulness and barrenness does not apply to whole sets of trees in the same season, as some of each variety fruit well each year, and are barren in the following season, and *vice versa*. Golden Spire and a few other varieties have the like habit. It is great

bearers which are most remarkable in this connection, and possibly, if their fruit were thinned severely in their season of superabundance, they would bear moderately in the following season. This will be a great year for Lane's Prince Albert, just as last season was a very poor one.

RESULTS OF DEFERRED CUTTING BACK.

In the autumn of 1911 some James Grieve Apples were planted, all but one row being cut back shortly after planting or in the following April. The exceptional row was left until last month, and the results were carefully noticed. As in a former trial with a different variety, the trees not cut back in the first season formed fruit buds on nearly the whole lengths of the young leaders, and had to be cut back nearly to the trunks to get to wood buds. The other trees did not require nearly so much cutting back this spring, and their present appearance is better than that of the exceptional row of trees. The most conspicuous disadvantage from deferred cutting-back is noticeable in the case of the numerous trees which, when received from their nursery as two-year-old trees, had each a strong central leader, with weak laterals. When these were planted the best treatment of them seemed clearly that of cutting off the laterals entirely, and shortening the central leader so as to make it throw out fresh laterals. This was done in the cases of trees cut back in the season of planting, with good results. In the case of the trees not cut back until last month fruit buds had developed on most of the central leaders, as well as on the laterals, so that, in addition to the removal of the latter, the central leaders had to be shortened more than was desirable, in order to get to wood buds. No difference whatever between trees cut back immediately after planting and those done in the following April was noticeable.

MAGNESIA AS A FRUIT MANURE.

Having noticed a strong recommendation of magnesia as a manure for fruit trees, and particularly for Plums, I tried a dressing of sulphate of magnesia on parts of two rows of this fruit and the Black Currants among them, and on one row of Apples. One pound was applied to each tree, and half a pound to each bush. The dressing was given a year ago, and the results have just been noticed, though not for the first time. They are not decisive in relation to Plums and Black Currants, but both trees and bushes which had the manure are at least as good as the undressed ones in the same rows, if not a little better. On the other hand, as was noticed even last autumn, the Apple trees have been dwarfed to a striking extent by the application of sulphate of magnesia. To-day they are not more than two-thirds of the size of the unmanured trees in the two adjoining rows. Both the Plum and the Apple trees are quite young. *A Southern Grower.*

should be trained to small sticks as soon as the flower-buds appear and liquid manure should be supplied to them twice a week. Cuttings of Roses inserted some five weeks ago need shifting into 2½-inch pots. Do not allow the roots to grow more than 1 inch long before the potting is completed. *Experience.*

NATIONAL ROSE SOCIETY'S ANNUAL, 1913.*

THE National Rose Society's *Annual* for 1913 consists of some 209 pages. The first place is given to a report of the Rose Conference held on the Monday preceding the opening of the International Exhibition. It was a conference of Rosarians from many countries, and save for the opening address of the President (the Rev. J. H. Pemberton) on "The Modern Development of the Rose" no formal papers were read. In the circumstances it is natural that the discussion should have been largely concerned with the lines on which future advance may be expected, and M. Soupert's warning not to neglect the Tea Roses is not without point in this country at the present moment. More than one speaker referred to the excessive number of varieties in our catalogues and gardens at the present day, and in a year which is said to be responsible for the introduction of no fewer than 300 new varieties of Roses the complaint seems, at first sight, reasonable. We must remember, however, that these new Roses have already received trial in the nurseries of the raisers, and there is a limit to the time to which these trials can be extended; further, the conditions of a nursery garden are in many respects essentially different from those of the ordinary amateur's garden: a Rose that may succeed in the North of Ireland may be unsuited to the South of France, and vice versâ, while Roses successful in either or both these districts may f the conditions of the English Midlands unsat factory. Again, the Roses introduced in commerce are a very small proportion of the raised and tested, and Mr. A. Dickson's estima of 5 per thousand is probably a very high or Seeing also that it is only by careful selection a rejection that true advance can be secured, t Rosarian owes something like a duty to his su cessors to obtain and prove new Roses, and should not be disappointed if he has to reje the greater number of his purchases. The som what indiscriminate praise to which new Ros are often subjected by their raisers and othe is, perhaps, partly responsible for the disappoin ment often experienced by the guileless amateu

The *Annual* also contains numerous articles o subjects of interest to the Rosarian. Dr. Wa dell professes to have found a remedy for Blac Spot in spraying with dilute formaldehyde; M Darlington has an article on the best Roses f standards, selected by the vote of a large number of Rosarians; Dr. A. H. Williams contributes some useful hints on spraying and an excellent classification and description of the Wichuraiana Roses—a class which he has made his own. In his classification he discards the old group of mid-season varieties, and groups them all as either early or late, the early "mostly hybrids of R. Wichuraiana with Teas, H.Ts., H.Ps. and Chinas," while the late "mostly have a strain of multiflora in their parentage." It is rather curious that while in the early group shades of yellow, including cream, salmon and copper tints, are numerous, they are entirely absent from the late group. Rose-growing in different places is treated of in a series of articles: at Kew by George Gordon; under glass, by W. Easlea; in the United States, by E. Gurney Hill; in Scotland, by G. M. Taylor; in the North of Ireland, by Alexander Dickson; in the South of Ireland, by Dr O'Donel Browne; in the North of Eng-

* *The Rose Annual*, 1913, edited by the Hon. Secretary Rose Bank, Berkhamsted. Price 2s. 6d. post free.



Photograph by W. J. Vasey.

FIG. 128.—NEW BEDDING ROSE ELLEN POULSEN.

THE ROSARY.

ROSE ELLEN POULSEN.

THIS beautiful bedding Rose (see fig. 128) was obtained from a cross between the varieties Madame N. Levavasseur and Dorothy Perkins. Plants were exhibited at the last two meetings of the Royal Horticultural Society, and illustrated well its value as a decorative forcing variety. The semi-double flowers are 2½ inches in diameter, deliciously scented, and the colour is a pleasing shade of pink.

CULTURAL HINTS.

IF space is available Maréchal Niel Roses may be planted, and it is best to select young actively-growing specimens in May or June. Provide a border for them as for a vine, and plant five or six specimens. Grow them on the long-rod system. Pot Roses intended for exhibiting

land, by Walter Jesper; and in towns, by an anonymous author. Mr. Gurney Hill deals entirely with Roses under glass, and he gives a list of about a dozen in favour of which all others have been excluded. Mr. G. M. Taylor's notes on Roses in Scotland are of special interest for his remarks on the varieties of the Scotch Rose (R. spinosissima) and the old fashioned Bush Roses, which are excellent. Mr. H. G. Rolt gives some useful suggestions for pegging down Roses. Mr. H. E. Molyneux deals with new Roses of 1912, and Mrs. E. H. Farmer with Pernetiana Roses. Mr. Mawley's well-known Rose Analysis also appears. It is satisfactory to learn from this that there is a general tendency perceptible for good garden varieties to improve their position in the exhibition list: while in an article on "Fasciation," suggested by a flowering head of Mrs. F. W. Flight shown in a photograph, Mrs. H. R. Darlington has collected into an accessible form what is known of this curious subject, which is one on which little information is to be found in the ordinary gardening books. The volume contains numerous photographs and five coloured plates of Roses, four of them taken at the Autumn Show and one in New Zealand. The society is undoubtedly right in experimenting in this direction, for the representation of colour with some approach to accuracy is what is most urgently required in the illustration of Rose literature. It cannot be said that any such result is yet obtained, the illustrations of Hugh Dickson and of Irish Elegance being perhaps the best of those reproduced. However, it is hoped that each year will bring improvement in the three-colour process, and in the meantime we must be thankful for the progress already made. Taken all round, the *Annual* is quite up to the level of previous years. *White Rose.*

ORCHID NOTES AND GLEANINGS.

WILLIAM BULL AND SONS, CHELSEA.

The late William Bull commenced the practice in 1881 of arranging an annual show of Orchids and other flowers in the month of May at his nursery, King's Road, Chelsea, and the present is the third of these exhibitions since the business has been conducted by younger members of the family. The establishment possesses exceptional advantages for holding a display of this character in the fine Winter Garden at the entrance, with its broad central walk and side paths overhung with Palms and Tree Ferns. On the present occasion the groundwork of a very pretty arrangement is composed of Lilies, Carnations, Pillar Roses, and other popular flowers. The main interest and beauty, however, centres in the Orchids and Hippeastrums (Amaryllis). In one effective pyramid is arranged a number of well-flowered Dendrobium Wardianum, in association with the graceful sprays of claret-coloured flowers of Odontoglossum Edwardii hybrids. Another elevated group has at its summit a fine specimen of Dendrobium thyrsiflorum with nine spikes; whilst a third very brightly-coloured group is composed of various forms of scarlet Odontioda Bradshawiæ and O. Dora. At several points are displayed blotched forms of Odontoglossom crispum raised by the firm, all with blooms of exceptionally good shape and finely blotched. Among those noted were O. crispum Mabel, a distinct and good variety; O. c. Princess Mary, with thickly spotted sepals, the petals having the inner halves coloured reddish-purple; O. c. Premier, O. c. Diadem and O. c. Florence. These and others are of the heavily blotched class; with them are several seedling forms approaching more nearly to the typical white form, some of them with effective spotting on the petals, and these are equally attractive. Lælio-Cattleyas are represented by some two hundred specimens of L.-C. Baden Powell, and although the flowers individually may not be equal to the best type, as judged by the present-day standard, the variously tinted rose and claret-coloured blossoms are effective in making a floral display. Lælio-Cattleya Aphrodite, a general favourite, is displayed in several pretty varieties; specimens of L.-C. Schilleriana, raised from seed, prove the correctness of the parentage assigned to the original natural hybrid form. There are in addition several pretty, unnamed Lælio-Cattleyas, one of the showiest being obtained from Lælio-Cattleya Warnhamiensis crossed with Cattleya Schroderæ, the three plants in flower having deep golden-yellow sepals and petals and dark claret-coloured labellums. A trio of specimens of Brasso-Lælia Digbyano-purpurata, several exceptionally fine B.-L. Helen and other crosses of Brassavola Digbyana give further variety. Other Orchids noted were Cattleya Schroderæ Queen Mary, of a soft rose-pink; C. Mendelii Princess, white with mauve lip, a good specimen of a very fine form of Odontoglossum luteo-purpureum, with an unusually large lip; and a remarkably handsome Cypripedium, a C. concolor cross, with finely-formed yellowish-cream flowers spotted with purple.

The Hippeastrums are the most effective plants in the conservatory, there being numerous varieties of the best large-flowered strain, with blooms varying from almost white to deep scarlet. Those noted as the best and most distinct were Queen Mary, a grand flower of fine shape, having white segments with a green centre, and faint rose lines on the petals; Winifred, tinged with cherry-red; Conquest, salmon colour with a red



Fig. 129.—THE CONSERVATORY IN MESSRS. BULL AND SONS' NURSERY, CHELSEA.

glow in the centre; Flambeau, scarlet; Coral, coral pink; Progress, one of the best in size and shape; Harmony, terra-cotta colour with a pink shade; and Florence, white with rose feather on the segments. A great variety of flowers useful for conservatory and for decorative purposes appears in the display, which is more than usually attractive this season.

KEW NOTES.

HARDY HEATHS.

DURING the past ten or twelve years Heaths have been liberally planted in the pleasure ground at Kew with very satisfactory results. The spring-flowering kinds most in evidence at the present time are:—Erica mediterranea (represented by hundreds of plants in full flower up to 6 feet in height), E. mediterranea vars. alba and nana, E. Veitchii, E. arborea, E. lusitanica (codonodes), E. australis, E. alpina, E. hybrida, and E. carnea. The Kew soil, which in most parts of the ground is light and sandy, with very little lime, is suitable for the cultivation of the many beautiful plants contained in the Natural Order Ericaceæ. All that is necessary is to dig the ground about 15 inches deep, working in a little leaf-mould and peat.

The idea in planting at Kew has been to make the groups as natural and informal as possible. Sundry large groups are confined to one kind, but very pleasing effects are produced where several intermingle, not regularly dotted over the plots, but in groups of varying sizes, with here and there one or several of a neighbouring group, as though strayed in accidentally. The elegant white sprays of E. Veitchii, for instance, rising among the pinkish red bushes of E. mediterranea, give a very good effect. The fragrance from masses of the spring-flowering Heaths is delightful.

E. australis is the brightest in colour of the tall, red-flowering Heaths, but being a little more tender than E. mediterranea, and rather straggling in habit, it has not been so extensively planted. For sheltered spots, however, it is very suitable.

ULEX EUROPÆUS VAR. FLORE PLENO.

THE double-flowered Gorse, or Furze, is a conspicuous feature in several parts of the garden at the present time. The largest and most effective mass is on the slopes of Mount Pleasant, near the end of the Sion Vista, close to the river It is rather smaller and more compact in growth than the common Gorse. The plants are seen at their best when, growing on banks of poor soil, they form masses of rich golden-yellow colour. On rich ground vigorous growths rather than quantities of blossoms are produced. The double-flowered Gorse is a useful plant for public parks and gardens. It can be planted in positions where impenetrable masses of growth are required, e.g., in shrubbery borders. The usual method of propagation is by cuttings, best taken at the end of August and September. For a few cuttings, pots filled with light sandy soil may be used, but when plants are required in quantity a bed should be made in a cold frame. The soil must be made firm, and the cuttings pressed in tightly with a dibber. Gorse does not transplant readily, and for this reason the cuttings should be potted singly when rooted, and grown in pots until large enough to plan in their permanent quarters.

PRUNUS AVIUM.

AMONG the several varieties of the flowerin Cherries, the Double Gean, Prunus Avium va flore pleno (or Cerasus Avium multiplex as th tree is called in some nurseries), occupies a lea ing place. The pure white, drooping flowe are borne in great profusion all along th branches. The tree is very effective at a di tance, especially in a shrubbery border with background of taller trees. The effect fro beneath the tree, looking up into the branche is even more striking. The Double Gean free in growth, and of considerable value fo town and suburban gardens, very seldom fai ing to yield a profusion of snowy-white blos soms. At Kew it is planted as a lawn speci men, as an avenue tree, and on the outskirt of the woods, in all of which positions it i very conspicuous when in flower, from th middle to the end of April. The type, Prunu Avium, with its single white blossoms, is als effective, but less conspicuous than the doubl variety. *A. O.*



[*Photograph by W. J. Vasey. Copyright.*

FIG. 130.—THE GHENT EXHIBITION: GROUP OF STOVE FOLIAGE PLANTS EXHIBITED BY THE FIRM OF LOUIS VAN HOUTTE.
(See page 296.)

NOTICES OF BOOKS.

HERBALS: A CHAPTER IN BOTANICAL HISTORY.*

FEW chapters in the history of botany are s fascinating as that dealing with the perio

* *Herbals: their Origin and Evolution. A Chapter in the History of Botany*, 1470-1670. By Agnes Arber (London: Cambridge University Press.) Price 10s. 6d net.

covered by Mrs. Arber's interesting work—the period extending between the mediæval revival of interest in the subject and its establishment as a pure science at about the end of the seventeenth and the beginning of the eighteenth century The authoress has done full justice to this important period, bringing to the task a combination of conspicuous literary ability with a thorough knowledge of the recent development of botanical science.

Though the work is mainly devoted to the origin and evolution of the printed herbal during two hundred years (1470 to 1670), the opening chapter gives an excellent summary of the earliest records of observations on plants—those of Aristotle, Theophrastus, Pliny, Dioscorides, and Albertus Magnus. The tale is resumed with the appearance of the primitive herbals of the end of the fifteenth century, with their somewhat crude but quaint and curious illustrations, many of which are reproduced in this book. Some of these early efforts in plant portraiture, however, are remarkably fine; indeed, the German Herbarius of 1485 was not excelled or even equalled in this respect until the Herbal of Brunfels in 1530 ushered in a new period of botanical illustration distinguished by the production of drawings very much better than those found in some botanical works of the present day. We must confess to a sigh of regret in passing from the older works with their weird and wondrous pictures and their equally remarkable and inconsequential text. It is hard to resist the temptation to quote from the latter, which incidentally throws much light on the manners and customs of the times, for Dr. Arber gives us a generous helping of quotations—indeed, hardly a page is without some quaint and aptly chosen passages relating to recipes, charms, spells, and myths. From the early English "Grete Herball" (1529) we learn that water was then regarded as a pernicious fluid for either external or internal use—"many folke that hath bathed them in colde water have dyed or they came home," and "it is unpossyble for them that drynketh overmoche water in theyr youth to come to ye aege that God ordeyned them." Echoes of the good old days are also heard in passages referring to the remedies for such results of settling differences out of court as "blackeness or bruisings comynge of strypes, specyally yf they be in the face," and in the remarkable variety of prescriptions against melancholy then considered necessary—the smoke of Aristolochia, for instance, "maketh the pacyent mery mervaylously and dryveth all devyllishnesse and all trouble out of ye house."

The longest chapter is that devoted to the history of the herbal in Germany, the Netherlands, Italy, Switzerland, France, and England respectively. The outstanding names here are Brunfels, Bock, Fuchs, and Camerarius, and they mark the culmination of the herbal, especially as to the faithful and artistic portraiture of plants with increasing accuracy in description and the shedding of most of the unscientific though singularly interesting extraneous matter characteristic of the earlier plant-books. It is worthy of note that even in those times there was decided internationalism in botanical study, expressed in rivalry, friendly and otherwise, co-operation between writers of diverse nationalities being fostered by travel and intercommunication generally, not without plagiarism and heated controversy. Many specimens of the really beautiful drawings produced by the writers named and others during this period are given with great fidelity, and a special chapter deals with the evolution of the art of botanical illustration.

Other chapters are devoted to the methods of plant description and to early methods of classification, from which we realise vividly how much the herbal writers did in preparing the way for the foundation of botany on a scientific basis and the important position which they occupy in the history of this science. Those to whom the quaint and bizarre notions of the early botanists make appeal will find in Chapter VIII. an interesting account of the extraordinary phases marked by the domination of astrological ideas and by the doctrine of signatures—heresies which showed remarkable persistence and which are by no means extinct at the present day.

The authoress is to be congratulated on having contributed an erudite yet eminently readable and sympathetic account of a chapter in the history of botany the importance of which is apt to be lost sight of. The works of the "Fathers of Botany" have too often been regarded merely as a storehouse whence writers of popular books on botany and gardening may draw quaint quotations in archaic language wherewith to enliven their own dull pages. At the end of the volume is a list of herbals published between 1470 and 1760, together with a bibliography and a full index. *F. Cavers.*

The Genus Eucalyptus.*

The seventeenth part of Mr. J. H. Maiden's *Critical Revision of the Genus Eucalyptus* deals with E. salmoniophloia, E. leptopoda, E. squamosa, E. Oldfieldii, E. orbifolia and E. pyriformis, all, except E. squamosa, Western species. E. salmoniophloia is described as the largest tree of the Eastern Gold Fields of Western Australia, and it furnishes one of the most valuable timbers. It is very widely diffused in the arid interior region, and flourishes in the desert. E. leptopoda is a shrubby species. E. squamosa had been regarded by previous writers as a variety of E. tereticornis. The anthers of E. squamosa have, in addition to an apical gland, a dorsal one, and it is the only species in which this character has been observed by Mr. Maiden. E. Oldfieldii is a shrub 8 to 10 feet high, forming an impenetrable shrub, but it is not a true "Mallee." It bears an elegant seed-vessel of medium size. E. orbifolia was founded on a fragmentary specimen collected in the interior by the late Mr. Charles Harper, previous to 1865, in which year it was described by Baron F. Mueller and presented to Kew. Mr. Maiden is indebted to the Director of Kew for a drawing of the same, made by Miss M. Smith. Concerning this he says: "I had the pleasure of meeting Mr. Charles Harper in Perth, Western Australia, in 1909, and showed him the Kew drawing, which I carried thousands of miles in Western Australia in my pocket-book, hoping to trace the original." In this, however, he was unsuccessful, though satisfied that it is a valid species. The specimen is a small twig bearing three leaves, an expanded flower, and a flower-bud. E. pyriformis is one of the large-fruited species, all of which, we believe, are shrubby. It is a very showy species, having crimson, rose, or yellow flowers, 2 inches in diameter. The flower-buds are pointed, and about 2½ inches long, and the strongly ribbed seed-vessel is about the same in its greatest diameter. Mr. Maiden regards E. pruinosa, E. macrocalyx, E. erythrocalyx, E. Youngiana, E. Rameliana and E. pachyphylla as identical with, or varieties of, E pyriformis. As thus limited, the species is common in Western Australia, and extends to western South Australia and western Queensland. The total number of species already described and figured in this work is ninety-four. *W. B. H.*

* *Critical Revision of the Genus Eucalyptus.* By J. H. Maiden. Vol. 2. Part VI. Published by the Government of the State of New South Wales. Price



Fig. 131.—Hydrangeas at the Ghent exhibition.

(See page 314.)

Trees in Winter.*

This is a volume of some 450 pages, dealing chiefly with the botanical characters, as exhibited in winter, of trees natural to, or cultivated in, North-East America One page is devoted to a description of each species, and facing the descriptive notes is a page of detailed illustrations. Conifers, as well as dicotyledons, are dealt with by the authors. While American species of trees necessarily make up the bulk of the volume, certain European species also find a place, as, for instance, Scots Pine, Norway Spruce, European Larch, the common Birch, the English Elm, and common Ash. The detailed descriptions of species is preceded by an excellent analytical table of genera and species. It is rather surprising that in a modern work the nomenclature should not follow modern lines, e.g., Picea Abies, and Larix decidua, for the common European Spruce and Larch respectively.

The volume, however, contains much more than merely a description of individual species, nearly 200 pages being occupied with a discussion of, or hints on, such subjects as ecology, photography, measurement, propagation, street planting, nursery management, pruning and diseases, and insect injuries. Though the work is primarily intended for American readers, it may with advantage be added to the library of British foresters and gardeners. *W. G.*

* A. F. Blakeslee and C. D. Jarvis. (The Macmillan Co., New York.) 8s. 6d. net.

THE ROCK GARDEN.

CYTISUS ARDOINII.

MANY species of Cytisus are suitable for planting in the rock garden or in walls with soil behind them; but there is none more delightful than Cytisus Ardoinii, a little gem which is one of the daintiest of all rock garden shrubs. This broom, which grows only a few inches high, has neat, slender branches and leaves, and pretty yellow flowers. It is of trailing habit; and is, I believe, one of the parents of Cytisus kewensis, though of much smaller growth.

C. Ardoinii is suitable for trailing over a small stone or a wall; one of the prettiest plants the writer has ever seen was growing on the top of a low retaining wall in a northern garden. There it appeared quite at home, with its roots penetrating between the stones into the soil behind them. The plant is perfectly hardy in most gardens, and grows best in sunny situations in light soil. *S. Arnott.*

PROPOSED NATIONAL SEED-TESTING STATION.

DEPUTATION TO MR. RUNCIMAN.

A JOINT deputation from the London Chamber of Commerce, the Central Chamber of Agriculture, the Royal Agricultural Society, the Agricultural Seed Trade Association, and the British Sugar Beet Council was received by the Right Hon. Walter Runciman at the offices of the Board of Agriculture on Tuesday last to urge the claims of a national seed-testing station under Government auspices. The deputation was introduced by the Right Hon. Lord Desborough, ex-President of the London Chamber of Commerce. Mr. W. G. Toogood, of Messrs. Toogood and Sons, President of the Agricultural Seed Trade Association, was the first speaker. Mr. Toogood said that on the general question the departmental committee appointed in 1901 was strongly in favour of establishing a national seed-testing association. At the present time growers in this country who wished to test their seeds had to send them to the Continent. If we buy in Germany we have to be content with the German tests, and if we sell to a Continental purchaser we have to go to the Continent for our guarantee of purity. Mr. Toogood pointed out that there were nearly 300 testing stations on the Continent, and that foreign buyers would insist on having a guarantee. The Irish Board of Agriculture, said Mr. Toogood, have adopted a seed-testing scheme which is working satisfactorily. Mr. Toogood was aware that the colleges were doing a good work in this direction, but it is much preferable to have a Government station. Mr. Hasler, of Messrs. Hasler and Clapham, stated that the members of the Agricultural Seed Trade Association had unanimously passed a resolution in favour of a Government station. Mr. Hasler pointed out that the seed industry was increasing in this country, and that the export of seeds resulted in a good profit for the growers. But seeds must be sold with a guarantee, and the tests at present have to be made in the countries to which the seeds are exported. The Board of Agriculture's *Journal*, said the speaker, constantly points to the necessity of buying seeds with a guarantee of purity, and he desired that this analysis should be confirmed by some central authority which would be final. Mr. Hasler pointed out that the Irish farmer had an advantage over us in this respect. He hoped that if the scheme was established any question between buyer and seller would be treated as a civil and not as a criminal process. Mr. Edward Sherwood, of Messrs. Hurst and Son, a member of the Agricultural Seed Trade Association and of the London Chamber of Commerce, spoke in favour of the scheme and said that it would be valuable for settling differences between buyers and sellers. It was desirable that the institution should be a national one, so that the results obtained would be indisputable. Mr. Sherwood also pointed out the disadvantage of having to make use of foreign tests, both for buying and selling. Mr. Coltman Rogers, J.P., of the Royal Agricultural Society, stated that the general attitude of the members of his society is that the scheme is a very desirable one. He also pointed out the disadvantages of having English seeds tested at Hamburg or Zürich, and pointed to the possibility of a deterioration by the sea voyage, which was to our disadvantage in either case. If Ireland has this great advantage, why not us? In Ireland in 1901 there were 480 samples submitted for analysis; in 1907 the number had risen to 1,460. It was therefore probable that the station might eventually pay its way. The number of samples tested in Hamburg were 2,000 and in Zürich 8,000. In reply to a question by Mr. Runciman, Mr. Rogers estimated the cost of a station at at least £1,000 a year. Mr. Rogers said that had his society established a seed control, the first thing they would have done would be to come to him (Mr. Runciman) to get recognition. Mr. Latham, of the Central Chamber of Agriculture, said that any proposed seed-testing station must be under Government control and entirely in the hands of the Government.

Mr. Runciman said :—

You have pointed out the difference between the steps taken in England for this purpose and those taken by other European countries, but I am sure you must have had in your minds the fact that in England we have done a great deal of this kind of work on a private—and therefore not on a uniform—basis for many years past. I had put into my hands while you were speaking an excellent paper by Mr. Long, of Edinburgh, on the subject of seed-testing, in which he gives a long list of places where seed-testing is carried on. The list includes Reading, Cornwall, Cambridge, Warwick, Chester, Hereford and Somerset. But, of course, these are not on a uniform basis, and therefore to that extent cannot perform a function analogous to that carried out by Zürich and Hamburg.

(Mr. Toogood : These provincial college stations are not recognised.)

We start, therefore, from the same position. You know a great deal of testing is going on, and you yourselves in some cases take advantage of it; but the fact of there not being Government-recognised stations is harmful to your export trade in particular and may have an effect on your internal trade as well. It is, however, by no means a simple question, as there are many interests concerned. I should have liked to know—perhaps you could obtain this information for me—whether your aim is to secure to the English farmer exactly the seed he requires, or to secure to the seedsman a guarantee for his produce for commercial purposes, or to secure to seed producers certainty of trade and a recognised standard which would operate not only on the markets of England, but also on those of the Continent and America. The answers to these questions must of necessity affect the scheme so far as the Board of Agriculture is concerned.

I gather from Mr. Rogers that the scheme, as he put it forward, would involve the State in an annual expenditure of £1,000. Of one thing we may be sure—that the revenue from fees must form a very small item compared with the expenditure, at any rate in the earlier years. The sum of money which would have to be forthcoming from the State should not, however, be regarded by us as being too large, considering the advantages which would accrue from it. My feeling is rather that we must not embark on any project which would not fulfil everything that is desired of it. We have heard that Ireland has the advantage of a Government guarantee for seeds. Do I understand that it is the Irish scheme you would like to see adopted i this country? As I understand that scheme, i amounts to this : To test the trade by sample from time to time, and if the seeds are found t be below standard the Irish Department pro ceeds to prosecute. I gather that this woul by no means fit the case of the export trade There is another system in Canada, which pro hibits the sale of low-grade seeds unless the sal note carries with it a description of the qualit of the seeds. That, again, scarcely gives yo what you require. I gather that what you ar asking for is something more in the nature o the Zürich guarantee than anything at all analo gous to the systems of Ireland and Canada.

I trust, therefore, that Ireland will not b used as a lever in screwing money out of us fo a seed-testing station. You have in the Englis provinces centres which are working with a educational and scientific purpose. You hav twelve considerable colleges. I have heard n suggestion that any of these could be used fo the desired purpose. I mention them for thi reason, that if any seed-testing system is to per form its full function it must not only provide a guarantee for the trade and enable the com mercial side of seed-producing to prosper on a sound basis, it ought also to have a demonstra tive value for farmers, for we must all desire t see our farmers using good seed, and none bu good seed. If they have this demonstrative value it is quite possible these twelve college might be used for testing purposes, provided the tests were all on a uniform basis, carried with them, so to speak, the Board of Agriculture's frank. If that would meet your requirements I should be glad to go further into the suggestion. Many of these questions are so open and unde cided that I should prefer you to give some con sideration to the college suggestion.

It was the opinion of the deputation that the seed-testing should be in the hands of one responsible man. It was pointed out that the suggestion to have twelve centres would result in twelve hall marks, but what they desired was one only.

Mr. Runciman.—Would you be satisfied if the Agricultural College at Cambridge, under Professor Biffen, became our English Zürich? The deputation thought the suggestion a good one, and Mr. Runciman promised to give the matter his sympathetic consideration.

SUNSHINE RECORDERS.

IT is quite an established custom now for the municipal authorities of seaside towns either to establish a small meteorological station, or to appoint a local meteorologist to supply them daily with weather reports. The most important reading from an advertising point of view—for after all the meteorological reports are circulated chiefly for the benefit of intending visitors—is that obtained from the sunshine recorder. This instrument records the duration of bright sunshine, and readings from the popular holiday centres are now a feature of the daily press.

The type of instrument in general use is the Campbell-Stokes recorder. It is the official pattern adopted by the Meteorological Office, and is the one generally found in the municipal stations. This type of recorder is fairly modern, the original form having been invented in 1857. It consists essentially of two parts :—

(1) A glass sphere which brings the sun's rays to a focus.

(2) A metal bowl carrying cards to form a belt, approximately spherical, on which the sun burns a record.

Great care has to be taken both in setting up the instrument, and in the adjustment for latitude and the meridian of the site selected. The site requires to have a perfectly free horizon between N.E. and S.E. on the east side, and between N.W. and S.W. on the west side, these being approximately the limits of the position of the rising and setting sun in our latitudes. Between S.E. and S.W. the view of

the sun must not be obstructed by the ground, buildings, trees, or any other obstacle. Any obstruction to the northward between N.E. and N.W. is of no consequence. An ideal site is not always possible, especially in mountainous districts. The method suggested for dealing with records from an instrument where the horizon is obstructed is to compare them with the total sunshine possible with a free horizon.

It is usual to cement the recorder in position, so as to obviate the risk of error through the instrument being moved.

When the sun's rays are focussed through the solid glass sphere, a record is burned on the chart in the bowl. The sun's varying declination, and consequent altitude at different times of the year, make it necessary to take the record in three different positions, as many different charts being required. There are long, curved summer cards for use from April 13 to August 31 inclusive. These are placed in the lowest of the three grooves in the bowl. For the winter, October 13 to the last day of February, the short, curved cards are used. The top groove accommodates these. The other cards, the equinoctial, are straight, and they are accommodated in the central groove. They are used from March 1 to April 12, and September 1 to October 12.

The best time for changing the cards is after sunset each day. It should be remarked here that the recorded day of sunshine is less than the actual time during which the sun is above the horizon by 20 minutes or so at sunrise and sunset. This is due to the fact that a very low sun has no burning power.

Some mention should be made of the Jordan Photographic Recorder. This instrument is made for use with ferrocyanide paper. A spot of light from the sun traverses the sensitised paper, which is arranged as a cylinder about a line parallel to the polar axis. The effect recorded is a photo-chemical one. This instrument is not nearly so widely used as the Campbell-Stokes pattern. The latter, being the official pattern, is used in all climatological stations.

One does not often find a sunshine recorder in a private park or garden, unless the owner of the place belongs to one of the meteorological societies. In this case, there will probably be a complete outfit of weather instruments, including rain gauge, thermometers, maximum and minimum; Six's solar radiation, terrestrial minimum; hygrometer; Stevenson's screen; barometer and anemometer.

At the present time there are over 5,000 rainfall observers in the British Isles, but it is doubtful whether there are 2,000 sunshine observers. The cost of the instruments may have something to do with this. A Campbell-Stokes recorder, with charts, costs about £14. It is, indeed, one of the most expensive meteorological instruments, but the authorities of the watering-places where a recorder has been set up have doubtless been well repaid for their enterprise. *E. P. Pearce.*



[*Photograph by W. J. Vasey. Copyright.*

FIG. 132.—AZALEAS SHOWN BY MESSRS. SANDER AND SONS, AT THE GHENT SHOW.

COLONIAL NOTE.

CINNAMON CULTURE IN CEYLON.

FEW people would have imagined "that with the extension of rubber cultivation in Ceylon, owners of plantations in suitable localities have found it to their advantage to root out Cinnamon and plant either rubber or coco-nuts." Such, however, is stated to be the case by the writer of a most interesting article on the history and cultivation of Cinnamon in Ceylon, which recently appeared in the *Chemist and Druggist*, and he further states that 25 per cent. of the Cinnamon plantations have been so rooted out, but that the effect of this policy has not yet been reflected on exports or prices, though this may be apparent later. The products of the Cinnamon tree (Cinnamomum zeylanicum) are first the bark prepared in quill form, which is the most familiar, next the bark in chip form, and then the oil which is distilled from both bark and leaves. The exports both of quills and chips from Ceylon for the past ten years show a steady increase. Thus in 1902 2,555,313 lb. of quills and 1,763,679 lb. of chips were sent away; in 1912 3,594,930 lb. of quills and 2,349,944 lb. of chips were exported. Germany, it is stated, is the largest buyer, both of quills and chips. In 1912 the direct exports from Ceylon to Germany were as follows:—Quills 972,613 lb. and chips 582,622 lb. Spain stood as the second best customer, the United States third, and the United Kingdom fourth with 222,567 lb. of quills, and 462,941 lb. of chips. South America is stated to be a large consumer of quills, but France is not a large consumer of Cinnamon, and Austria, Belgium, Denmark and Egypt are only small direct importers.

It is generally supposed that the Cinnamon tree is cultivated only in Ceylon, but Watt says "it is also to be met with in the forests of Tenasserim, and is experimentally cultivated in South India." It has also been introduced into Java and the Malay Islands, and into the Seychelles Islands as long ago as 1775. "Their cultivation was subsequently abandoned, but the trees grew and took root in the forests, where they were entirely neglected until about 1908." The total imports of Cinnamon into this country from all sources in 1911 amounted to 1,344,393 lb. of the value of £21,790. Of this quantity 395,140 lb. was furnished by Seychelles. "Two or three decades ago," we read, "the periodical sales of Cinnamon (in London) would include from 5,000 to 8,000 bales of Ceylon in a single batch, which would sell at, perhaps, from 1s. 6d. to 3s. per lb. for firsts, 1s. to 2s. 6d. for seconds, and 9d. to 2s. for thirds. Going still further back, from 4s. to 4s. 6d. was paid for choice quality. Within recent years the quality of Cinnamon has undoubtedly fallen off, there being much more 'woody' stuff than formerly, and this is difficult to get rid of." The writer concludes his article with the opinion that "the outlook for an expansion of the Cinnamon trade not hopeful, and in fact, its decadence at the Port of London is not an affair of yesterday." J

The Week's Work.

THE ORCHID HOUSES.

By W. H. White, Grower to Sir Trevor Lawrence, Bart., Burford, Dorking.

Dendrobium.—For several months past Dendrobiums have provided a beautiful display in one of the warm houses here. Considering the ease with which the majority of these plants may be cultivated, the abundance of blossoms they produce, and the small amount of space they occupy, it is remarkable that they are not grown more by amateurs. A large number of beautiful and distinct varieties are obtainable, and they would prove serviceable to the amateur grower for many purposes of floral decoration. The following species provide a fairly representative collection :—D. Wardianum, D. crassinode, D. Findlayanum, D. albo-sanguineum, D. primulinum, D. crepidatum, D. cretaceum, D. Falconeri, D. F. giganteum, D. Hookerianum, D. lituiflorum, D. superbum, D. regium, D. nobile, and its white variety virginale; and varieties of D. nobile, including Cooksonii, Burford variety, Thwaites' variety, elegans, Ballianum, and Amesianum. Amongst the numerous hybrids I may enumerate D. melanodiscus, D. Euterpe, D. Clio, D. Aspasia, D. Wiganiæ, D. Wiganianum, D. Sybil, D. Venus, D. Apollo, D. Juno, D. Thwaitesiæ, D. Chessingtonense, D. Lady Colman, D. Othello, D. Melpomene and D. Ainsworthii, and its varieties, of which splendidissimum is probably the best. The majority of these plants, having finished blooming, have commenced to make new growths, which, when only a few inches high, develop roots from their bases. At the same time the old roots are sending out rootlets, and, as the roots are very brittle and are injured easily, no time should be lost in attending to the requirements of the plants in the matters of potting or top-dressing. Specimens that are pot-bound should be repotted at once. Such plants should be turned out of their pots; if the roots are likely to be injured by this process it is better to break the pot, removing the portions carefully, so as to cause as little injury to the roots as possible. If the roots have encircled the drainage do not disturb the latter, but place the whole mass in a larger pot, with the base of the young growths about on a level with the rim. Employ plenty of drainage materials, and use a mixture of Osmunda-fibre and A1 fibre in equal parts. The materials should be packed moderately firmly around the ball of the plant, and in such a manner as to allow water to pass rapidly through it. As regards old plants which have to be divided I find, in most cases, the best plan is to pot each portion separately. Those which have deteriorated through loss of roots or from other causes should be turned out of their pots, cutting away dead roots, also decayed and useless pseudo-bulbs. It is always advisable to grow such specimens in pots of as small a size as will just accommodate them, using plenty of drainage and Sphagnum-moss only as a rooting medium. The majority of the above-mentioned Dendrobiums grow satisfactorily in ordinary flower-pots, but those with pendulous stems, such as D. lituiflorum, D. primulinum, and D. cretaceum, should be placed in shallow, hanging pans. Pans are better than teakwood baskets, because the plants are more readily attended to when they need a larger receptacle. For several weeks after root disturbance the plants require very careful watering, as an excess of moisture will cause the young growths and the old roots to decay. Guard also against too much atmospheric moisture, which will soon cause "spot" to appear in the young leaves. It is advisable to keep them rather on the dry side until the new roots are seen pushing through the compost, when the moisture may be increased gradually. Damping the bare spaces should be regulated according to the weather. Syringing between the pots on mornings and afternoons will be sufficient for the present—if the atmosphere of the house is usually moist once a day will suffice. As growth increases, and the weather becomes warmer, moisture may be afforded more plentifully. When the plants are established thoroughly, and roots are plentiful, the plants may be sprayed lightly overhead with tepid rain water several times daily, especially during warm summer days. Dendrobiums as a class require, when in full growth, a warm, moist atmosphere, with an abundance of light. Plenty of air should be admitted to the house on all favourable occasions, and even at night, when the outside air is calm and mild, especially where there is sufficient artificial heat to maintain the required temperatures. Sponge the under-sides of the leaves often to keep the foliage free from thrips and red spider. Plants that have been imported recently should first be placed in crocks only, and kept in the Cattleya or intermediate house until growth commences, when they may be potted and be placed in a warm atmosphere. The present is a suitable time to pot seedling Dendrobiums. They grow and root freely in Sphagnum-moss, well mixed with small crocks. At the second potting employ Osmunda-fibre and the A1 fibre mixture.

PLANTS UNDER GLASS.

By F. Jennings, Gardener to the Duke of Devonshire, Chatsworth, Derbyshire.

Fuchsia.—Young Fuchsia plants raised from cuttings should be ready for their final potting. If standards are required, strong, straight plants should be selected, and, after being potted, staked at once, removing all side growths. For training as pyramids, retain the side growths, whilst plants for bushes should be stopped, if this has not been done already; but do not pinch the growths until a few days after the plants have been potted. The compost for this potting should consist of rich loam mixed with leaf-mould, coarse sand, a little soot and cow manure. Grow the plants in a warm temperature and moist atmosphere, hardening them by degrees as they become established.

Seedlings.—Seedlings of Celosia, including Cockscombs, Balsams, and Humea, should be repotted. Fresh batches of these plants should be raised from seed sown at intervals, according to requirements.

Carnations.—By this time the early buds of Souvenir de la Malmaison varieties will be beginning to show colour, and should be well shaded from the sun, or the blooms will be of a faded tint when open. The plants should receive liberal supplies of water, especially the old stock plants which are required for layering in the autumn. A good plan of obtaining strong, healthy layers is to remove the flowers as soon as possible from some of the plants, and place these latter in a cold house, or the open air. Before the plants are removed they should be examined carefully for the presence of green fly, and they must not be allowed to become too dry. The floor of the house and the staging between the pots should be damped, and the plants should be shaded during the hottest part of the day. Young plants will be benefited by plenty of air. All the young growths should be carefully trained to stakes. Feed the roots regularly with a mixture of Clay's Fertiliser and soot, and fumigate the house at intervals; liquid cow or sheep manure must not be used, as this would cause the soil to become sour.

Primula obconica.—Seedlings of this beautiful and popular Primula are ready for repotting finally. The compost should consist of equal parts of rich loam and leaf-mould, with the addition of coarse sand, decayed cow manure, a little mortar rubble and wood ashes. Soak the soil with water and place the plants in a warm frame, shielded from the direct rays of the sun.

Campanula pyramidalis.—Seeds should be sown this month in pots or pans in order to obtain good, strong plants for next season. The soil should be finely sifted, and mixed with plenty of sand; it is advisable to soak it thoroughly before sowing the seed. When sown, the seeds should be covered thinly with fine soil, and the pots placed on a warm shelf, with glass and brown paper over the top. As soon as they have germinated a little air should be admitted under the glass, and the paper should be removed. Eventually the glass should be dispensed with, and the seedlings hardened gradually. They should be placed finally in a cold frame, in 60-pots; or they may be planted out on a warm border. Plants in 6-inch pots which were raised from seed sown last May should be ready for transferring to 9 or 10-inch pots. The soil should be composed of three parts good loam and leaf-mould, and one part coarse sand or mortar rubble, with decayed cow manure, a little soot and fine bones added. The plants should be potted firmly and well soaked. Grow them in a cold frame, hardening them gradually to permit of them being grown out-of-doors throughout the summer and autumn. During the winter they should be placed again in a cold frame, or house, as they need protection from frosts. Established plants which are beginning to blossom should be supplied liberally with manure water. The roots must never be allowed to become dry, or to suffer from want of food. The shoots should be staked carefully. Grow the plants in batches in an intermediate house or conservatory as required. During the flowering period the house should be fumigated at regular intervals. The old flowers should be carefully removed as they fade, as this will add considerably to the length of the flowering period.

THE FLOWER GARDEN.

By Edward Harriss, Gardener to Lady Wantage, Lockinge, Berkshire.

The Propagation of Spring-flowering Plants.—Many spring-flowering plants, such as Wallflowers, are best raised from seed, and a sowing should be made at once, choosing well-prepared soil. If the ground has been dug during the winter it may be forked lightly, and raked over, leaving the surface smooth and even. The seeds should be sown thinly, in drills about 1 foot apart, and lightly covered with fine soil. Certain varieties of Wallflower do not germinate very readily, and these should be sown in a cold frame; the frame should be kept closed and shaded until the seedlings are through the soil. Varieties suitable for bedding purposes are : Fire King (orange), Blood Red, Darkest of All, Phœnix (rich chestnut), Purple Queen, Vulcan (crimson), Cloth of Gold, Faërie Queen (primrose), Ellen Willmott (ruby), Eastern Queen apricot), Giant Yellow, and Earliest of All. Polyanthuses should also be sown in a cold frame; when the seedlings are large enough they should be pricked out in beds, and moistened lightly by means of a fine-rose can two or three times a day, until they are well established. The choicer varieties of Aubrietia should be propagated from cuttings. There is at present plenty of half-ripened growths on the plants which are suitable for this purpose. The cuttings should be inserted in boxes of sandy soil, and placed in a close frame, which must be shaded from too bright sunshine until the plants are rooted. Arabis is easily propagated from cuttings. The double form furnishes a most useful plant for spring bedding, and is best multiplied by division of the old plants. Most of the pieces will have roots attached; these should be planted in boxes and placed in a cold frame for a few days, protected from bright sunshine until growth begins. Pansies may be sown now in a shallow frame, kept shaded until the seedlings appear. Campanula persicifolia grandiflora may be sown out-of-doors in prepared ground. C. pyramidalis is a very useful and effective plant for the herbaceous border, as well as for the conservatory. It should receive the same treatment for outdoor as for indoor flowering, and should be planted out at the present time. Seeds should be sown in boxes, germinating them in slight warmth, afterwards growing the seedlings in cold frames. Silene, Delphinium and Alyssum may be sown out-of-doors, but the ground for their reception should not be exposed to the full glare of the mid-day sun.

Roses.—Attacks of aphis must be carefully guarded against in the Rose garden. Should the pest appear on the leaves, syringe the trees with a mixture of soft soap and sulphur. The sulphur will also check mildew. Caterpillars are particularly numerous this season, and unless they are diligently sought for, they may do much damage. An occasional dusting of soot or guano during rainy weather will have a stimulating effect on the plants.

General Work.—During dry weather examine recently planted trees and shrubs to see if they require water. Some of the choicer kinds of shrubs that have been planted lately should, if

they show signs of flagging, be sprayed with the syringe. A mulch of some moisture-retaining materials will be beneficial to newly-planted trees. Rhododendrons, especially, require liberal treatment in this matter. When these latter shrubs have passed out of flower, pick off the seed vessels.

THE HARDY FRUIT GARDEN.

By B. Goodacre, Gardener to Sir Ernest Cassel, Moulton Paddocks, Newmarket.

Young and freshly-planted Trees.—Cordon, pyramid, and even bush trees which have been planted this season may be well supplied with fruit buds, which will, if allowed to remain, make an attempt to produce mature fruit. In small gardens, where the trees are few, here is a great temptation to allow the buds to develop and yield a crop the first season. This, however, is a mistake, as no freshly-planted tree will yield a really good crop of fruit, and the growth will become weak and stunted in consequence of the undue effort, the result of which will be serious injury to the following season's buds. The best plan is to remove at once all the flower buds, and encourage a vigorous growth. If it is necessary to test the variety, a very few flowers may be allowed to set, afterwards thinning the crop to an odd fruit or two. If the trees become too vigorous, they can easily be brought into a fruitful condition by omitting to prune at a later date. The trees should be encouraged to form roots by a mulching of straw kept damp by frequent waterings and by constant syringings. Many older trees which have become weak or stunted by overcropping will benefit by the same treatment. Freshly-planted wall trees, unless they have a northern aspect, will become dry at the roots more quickly than those in the open ground, and will need more constant supplies of moisture.

Protection of Small Fruit Trees.—In many places where a plot of land is devoted to the cultivation of small fruits, it has been found an advantage to cover it entirely with permanent wire netting. It protects the fruit from frosts and from the depredations of birds in the early spring, and, later on, effectually prevents the ingress of blackbirds. The trees will now be far enough advanced to be proof against the first danger, and the doors of the wire structure should be left always open, to permit of the entrance of birds in search of insects, more especially where gooseberries are growing. It is a good plan to have the sides made so as to be entirely removed on occasions so that the birds may have free access to the Gooseberry bushes, for they will devour the caterpillar which causes much damage if not checked. If the pest has already taken a hold on the bushes, they should be syringed at once with a good insecticide. Some mixture containing a certain proportion of nicotine will answer the purpose best—it will kill the grub in a few minutes. The trees should be afterwards syringed with clear, soft water, and the decayed leaves raked together and burnt.

THE KITCHEN GARDEN.

By John Dunn, Foreman, Royal Gardens, Windsor.

Cauliflowers.—Plants which were wintered in cold frames and are now planted out should be examined frequently to ascertain if the roots require moisture. If the ball of soil around the roots is dry, afford sufficient water to moisten the ground thoroughly. It should be remembered that dry conditions at the roots may result in stunted growth, and the plants bolting. The cultivator should endeavour to grow these plants without a check from the start to the finish. As growth advances the roots may be afforded liquid manure on frequent occasions.

Runner Beans.—Scarlet Runners may be sown in small pots or boxes, and placed in a cold frame. When the young plants are a few inches high they should be planted out in trenches made at least 8 feet apart, in order that all the plants may obtain the full benefit of the sunshine. The next plantation should be made in the open ground, about the middle of May. Both sets of trenches should be made at once; a liberal supply of decomposed farm-yard manure should be well dug into each trench. During hot weather Runner Beans should be watered frequently with liquid manure. The young plants should be protected from rough winds by means of sticks. If slugs are troublesome the plants should be dusted with soot in the early morning.

French Beans.—If cold pits are available, a sowing may be made now to furnish supplies before those from the open border are to be had. The bed should be raised to within 2 feet of the roof-glass, and the seeds sown in shallow drills made 18 inches apart. Plants in pots from which supplies are being gathered should be watered frequently with liquid manure. The plants should be syringed, and the pits closed as early in the afternoon as possible, consistent with safety. A sowing of a good early variety may be made in small pots and placed in a slightly heated pit. The seedlings will be ready for planting on a warm south border about the third week in May. The plants must be hardened gradually before being placed outside, and protected from the cold winds and possible frost afterwards. The Belfast is a good variety for this purpose.

Broad Beans.—Make another sowing of Broad Beans in order to continue the supply as long as possible. A cool part of the garden should be chosen for the purpose, and the seeds planted in double rows, 3 feet apart. Green Windsor is one of the best varieties, unless smaller seeds are desired. Beck's Dwarf Gem is a good sort for autumn supplies, and the Beans may be cooked while quite young, when about the size of ordinary Peas.

Turnips.—The first sowing of Early Milan Turnips should be ready for thinning. The plants should be thinned to 6 inches apart, and the ground lightly stirred with the Dutch hoe. The plants should be dusted freely with wood ashes in the early morning, when the foliage is damp. A sowing of the variety Snowball may be made in the open ground. This variety requires 15 inches space between the rows, and, when the crop is thinned, 9 inches should be left between each plant. New Globe and Veitch's Red Globe may also be sown, the spaces to be the same as for Snowball.

Seed-sowing.—Savoy Cabbages and other winter greens should be sown early in May. An open situation is the best, and the ground should not be too rich. Sow thinly in drills one foot apart, to allow of the use of the Dutch hoe between them. Dwarf Curled, Latest of All, and Dickson's Omega are three good varieties, and they provide a succession from October until the end of March; the last keeps well into April if planted in a cool place. The latest batch of Cauliflowers should be sown. If the plants are put out as soon as they are large enough, they will yield supplies until very late in the autumn. Early London, Autumn Giant, and Hallowe'en Giant should be included in this sowing. All the winter and spring Broccoli should be sown by the second week in May.

FRUITS UNDER GLASS.

By James Whytock, Gardener to the Duke of Buccleuch, Dalkeith Palace, Midlothian.

Forced Strawberries.—After the end of April Strawberries may be kept in rather cooler and more airy places than before. Strawberries which are kept in vineries and subjected to fire heat too late in the season are apt to be atttacked by red spider. They should be transferred to a cool Peach-house, or to some house especially adapted to their needs. Here they should be thoroughly syringed twice daily (except when they are in flower), using a little mild insecticide until the fruit shows signs of ripening. The plants must be carefully examined for signs of dryness at the roots and frequent applications of manure water should be given until the fruits begin to colour, after which clear water only must be used. As the fruits swell the smaller berries should be removed and the foot stalks supported with short twigs to prevent the fruits being injured by the edge of the pot. While the fruit is swelling the house should be closed in the afternoon (with a high temperature if the sun is shining). When the fruit is colouring admit an abundance of air and maintain rather drier conditions. Later batches should be cleared of all decayed leaves before being placed on the shelves, and if the latter have been occupied previously by Strawberries they should be thoroughly washed down, using an insecticide to destroy possible pests. If the pots are very full of roots it will be well to place a saucer or a piece of turf under each receptacle.

Early Peaches and Nectarines.—In the earliest houses the Peaches and Nectarines are ripening or approaching ripeness, and the fruits ought to be exposed fully to the light by placing strips of wood under the shoots, by bending over some of the leaves that would otherwise shade them, and, possibly, by removing some of the leaves altogether. There should always be a free circulation of air in the house, and no syringing should be carried out that will wet the fruits, but the paths and other available spaces in the house should be damped frequently Directly the fruit is gathered syringing should be recommenced, carrying it out twice daily and using soft water, occasionally substituting for the soft water an insecticide that will destroy red-spider and other insect pests. When Peaches are ripening their fruits, these should be examined every day. The greatest care should be exercised in this operation, handling the Peaches as little as possible, and leaving those fruits for a little time longer that do not separate easily from the stalk when pressed very gently. Peach fruits should never be allowed to fall to the ground, therefore nets are frequently placed under them in case they may become separated from the stalk in the intervals between gathering times. Peaches and Nectarines that have to be sent long distances by rail need to be gathered just before they are fully ripe. When the trees are quite clear of fruits water will be necessary for the inside border, and some of the superfluous shoots may be cut from the trees in order that those required for fruiting next season may mature more perfectly.

Succession Trees.—In succession houses Peaches and Nectarines are now at the stoning stage, and they require an atmospheric temperature varying from 55° to 60°. Syringe the trees twice a day during bright weather and occasionally substitute quassia extract to destroy aphis, or, if thrips or red spider is present, employ a nicotine insecticide. Do not allow the trees to be overcrowded with young growths, but train in just a few more shoots than will be necessary for next year, cutting back any of extraordinary strength. Pay particular attention to the ventilation, remembering that although atmospheric moisture is necessary, a close, stuffy atmosphere is injurious. Directly the stoning stage is passed, manure water may be afforded the roots.

Forced Fig Trees.—Old-established Fig trees that have their roots confined to borders of limited size need plenty of manure water during the time the fruits are passing through their final swelling. Maintain a moist atmosphere, and syringe the foliage at least once on every fine day. Directly indications of ripening appear, discontinue the applications of manure water and the syringing, and admit more air, applying only just sufficient water at the roots to prevent the second crop suffering from drought. In order to encourage the development of the second crop the shoots must be stopped and regulated to avoid overcrowding. As soon as the first crop has been gathered the atmospheric temperature may be raised, allowing the heat to rise to 80° or even to 85° in the afternoon according to the weather out-of-doors. A mulching of manure may be applied to the borders, and the roots fed liberally with manure water, maintaining a moist temperature and syringing the trees daily. Young Fig trees planted recently in prepared borders must be kept perfectly clean from red spider, and, whilst growth should be encouraged, the trees must be so treated that they will not grow too strongly. They do not require manure water, and even the supply of clear water need not be excessive. The object is to get the trees into a bearing condition as quickly as possible; it may be necessary to employ fire heat in the autumn to induce ripening of the wood

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher. — *Our Correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the* PUBLISHER; *and that all communications intended for publication, or referring to the Literary department, and all plants to be named, should be directed to the* EDITORS. *The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.*

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS, 41, Wellington Street, Covent Garden, London.** *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

Special Notice to Correspondents. — *The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

Illustrations.—*The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.*

Local News.—*Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, MAY 12—
United Hort. Ben. and Prov. Soc. meet.

WEDNESDAY, MAY 14—
Roy. Hort. Soc. Coms. meet. Tulip Sh. at R.H.S. Hall.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich—52.6.

ACTUAL TEMPERATURES:—

LONDON.—*Wednesday, May 7* (6 p.m.). Max. 56°. Min. 38°.
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—*Thursday, May 8* (10 a.m.); Bar. 29.3. Temp. 53°.
Weather—Raining.

PROVINCES.—*Wednesday, May 7.*—Max. 49° Londonderry; Min. 38° King's Lynn.

SALES FOR THE ENSUING WEEK.

WEDNESDAY NEXT—
Gladiolus, Lilies, Border and other Plants, at 1; Japanese Liliums, etc., at 3 30; Palms and Plants, at 5. At 67 & 68, Cheapside, E.C., by Protheroe and Morris.

FRIDAY NEXT—
Clearance Sale of Greenhouses, Piping, Carts, etc., also Greenhouse Plants, at the Priory Park Nursery, Acton, W., by Protheroe and Morris, at 12.

A Loaf of Bread.*

The mental food provided by Professor Wood in his "Story of a Loaf of Bread" is, as befits the subject, plain, ample and sustaining. The manual stands to most other volumes on popular subjects as the homely cottage loaf stands to fancy bread. The temptation to flowery language which besets the popular writer has been withstood, and all who prefer wholesome mental food and who wish for sound information on a subject at once sober and fascinating, should read and study this little volume. Within the compass of 140 pages the story is told, from the growing of the Wheat, the vicissitudes which bring it to the mill, the apotheosis of the Wheat grain in the form of cottage, tinned, fancy or "standard" loaf.

The book opens with a brief consideration of the economics of Wheat-growing, and the author points out that with such an adaptable plant as Wheat the range of cultivation is determined mainly by the hunger of the world; as the population grows so the Wheat area increases, and for the reason that just now the world's population is increasing faster than the area under Wheat it is possible to predict an extension of that area both here and elsewhere. Yet, although Wheat will grow under very varied conditions, its success is determined by physical conditions, and particularly by texture of soil and amount of rainfall. On the heavier loams and with an annual fall of 20-30 inches of rain Wheat grows best.

The accounts of the food requirements of the plant and the relation of these requirements to the rotation of crops make excellent and instructive reading. The philosophy of rotations is shown to depend first on the fact that nitrogen is the most expensive substance which the farmer has to purchase. Nitrogen in manures costs 7d. a pound, whereas phosphorus may be had for 5d. and potassium for 2d. This and the fact that nitrogen serves only for the year and is washed out of the soil, whereas the other essential minerals may remain for much longer in the soil, are the *raisons d'être* of current rotational practice.

These facts are illustrated strikingly by the Rothamsted experiments. Given a complete mineral food—nitrogen, phosphorus, potash, etc.—the yield of Wheat is about 35 bushels per acre; omit the nitrogen and it falls to 15 bushels; whereas if nitrogen alone be supplied and no addition be made of the other "essentials," the yield reaches 21 bushels.

The individualistic tendencies of our race are illustrated in graphic manner in the chapter on marketing, wherein are described some of the measures of Wheat and their values. In East Anglia Wheat is sold by the coomb, which in strictness equals 4 bushels, but which is accepted to mean 18 stones. In Yorkshire it is sold by the load of 3 bushels; in Oxfordshire and Gloucestershire the load is 40 bushels, and in Lancashire 144 quarts. Elsewhere the boll is the unit, but one which varies from 3 bushels in Durham to 6 at Berwick. Nor is the bushel itself a fixed measure; it means 63 pounds in London, but only 62 in Birmingham; Liverpool and Manchester agree at least in this, that a bushel is 70 pounds; the bushel in South Wales is 80 pounds. As Professor Wood points out, these local vagaries of measure are a definite handicap to the farmer, and it is time that a stable and general unit was introduced. As is to be expected from the fact that the University of Cambridge is playing an important part in Wheat breeding, a good account is given of the methods adopted for the production of rust-resisting strains and of races which shall combine high yield with strength. These are subjects, however, to which, on more than one occasion recently, we have directed the attention of our readers, and hence they need not occupy us now. Suffice it to say that in both of these tasks the Cambridge investigations appear to have achieved conspicuous success.

The subject of baking, the secrets of self-raising flour, and the composition and dietetic value of bread are dealt with in brief yet luminous fashion, and the book concludes with a consideration of the merits of brown and "standard" bread as compared with those of ordinary white bread.

Professor Wood is inclined to think that the claim advanced on behalf of brown bread—that it contains more phosphoric acid than does white bread—though sound is not of importance. He points out that so far as is known, white bread contains enough. It is at least probable, however, that young children require much larger quantities of phosphoric acid than is commonly supposed, and that therefore standard bread may possess an advantage which Professor Wood does not appear to have considered.

The book concludes with an excellent point, namely, that although the various breads do not differ widely from one another in respect of nutrient substances, digestibility and the like, they do differ from one another very considerably with respect to water-content. This is a matter of the first importance, for any loaf of bread contains something approaching one-third of its weight of water. Hence to buy bread containing more than the average quantity is to pay a high price for water. The observations made by Professor Wood are so important that we conclude by quoting them.

In samples of bread one day old bought at random the amounts were:—

Cottage loaves of white flour, 31.7 per cent. water; tinned loaves of white flour, 32.7 per cent. water; small fancy loaves of white flour, 33.7 per cent. water; tinned loaves of standard flour, 35.9 per cent. water; tinned loaves of brown bread, 40 per cent. water.

As Professor Wood observes, "it is quite extraordinary that no one who has organised any of the numerous bread campaigns in the Press appears to have laid hold of the enormous variation in the water-content of different kinds of bread and its obvious bearing on their food-value."

Coloured Supplement.—Anyone who takes an intelligent interest in plants ought to find Rhodochiton volubile one teeming with interest and charm. This quick-growing, free-flowering climber from Mexico is not like any other greenhouse plant, either in manner of growth, foliage, or in flowers. The slender shoots cling by means of sensitive twining leaf-stalks which clasp as firmly as Clematis or Tropæolum; the elegant leaves are purplish when young, and they have an ivy-like look at a distance; the flowers are a combination of bell and tube, the calyx being like the flower of a Campanula, and the corolla like one of the long-flowered Fuchsias—Bell-Fuchsias the children call them when they see them hanging from the roof of a greenhouse. The pity of it is that they are only rarely seen, Rhodochiton being by no means a common plant in gardens. Yet it is just the plant for clothing tall pillars in conservatories or to form a sort of drapery where there are rafters to be hidden or overhead space to be filled. It grows as quickly as Maurandia or Lophospermum, to which it is nearly related, and it rarely gets out of condition if the treatment it receives is fair. When first in-

* *The Story of a Loaf of Bread.* By Professor T. B. Wood. Cambridge Manuals of Science. (The University Press, Cambridge.) 1s.

troduced, in 1834, by Mr. Low, of the Clapton Nurseries, who obtained it from Berlin, Rhodochiton was supposed to be "perfectly hardy" in this country, but it will not stand frost, nor can it support rough weather in summer. The protection of a greenhouse is needed to bring out the best qualities of this plant. The dark purple corolla is not developed until the calyx has grown to full size, and the corollas fall off whilst the calyces remain till they wither on their hair-like stalks. The name of the plant is a particularly happy one—Rhodochiton meaning red garment, say, shirt, which is what the calyx is to the flower and afterwards to the seed capsule; and volubile means twining. In this species the power to coil round and clasp firmly is confined to the leaf stalks, though the young stems revolve considerably, so as to afford the petioles a chance to catch on to some object that would serve as a support.

Royal Horticultural Society.—The next meeting of the Committees will be held on Wednesday, the 14th inst., in the Society's Hall, Vincent Square, Westminster. At 3 p.m., Sir Everard im Thurn will give a lecture on "The Cocoa-nut Palm."

Horticultural Club.—A House Dinner of the Club will take place on Wednesday, 14th inst., at the Hotel Windsor, Victoria Street, Westminster, at 6 p.m., when Mr. Wilfred Mark Webb will give a lecture, entitled "Gilbert White as a Gardener and Naturalist."

Kew Guild Dinner.—The annual dinner of the Kew Guild will be held at the Holborn Restaurant (Caledonian Room), on Wednesday, the 21st inst., at 7.30 p.m. Mr. W. Goldring will preside. The dinner will be preceded by the Annual General Meeting at 6.45 p.m. Many old Kewites now home from abroad will be present, and a good gathering is anticipated. Members wishing to attend should communicate with the Secretary, Mr. H. Cowley, South Side, Kew Green.

The Midland Re-afforesting Association.—The report for 1912 shows that this Society is making headway, and that the work of tree-planting on waste land in the Midlands is progressing. The Board of Agriculture has made a small grant of £100 from the Development Fund, and it is hoped that with this much-needed assistance the work of the Association may extend rapidly.

Manchester Royal Botanical and Horticultural Society.—This Society will hold a Rose Show and Horticultural Trades Exhibition, in the Exhibition Buildings, Rusholme, Manchester, on July 11 and 12. It is expected that this exhibition will be the most important held in Manchester for many years past. Medals will be awarded, in addition to certificates and diplomas. Particulars may be obtained from the secretary, Mr. P. Weathers, Royal Botanical Gardens, Old Trafford.

Storm at Kew Gardens.—The *Kew Bull tin* gives details of the damage caused to trees in the Royal Botanical Gardens by a storm of unusual violence which occurred on the evening of March 22 last. It commenced suddenly between 7 and 8 p.m. and ceased as abruptly soon after midnight; at its height the wind is said to have attained a velocity of 70 to 80 miles an hour. The single specimen of the true Pitch Pine (Pinus palustris) had its top broken off. This tree was about 13 feet high and consisted of one stem about 3 inches thick bearing a few tufts of leaves near the top. Of the well-known group of very picturesque Weymouth pines (Pinus Strobus), which stood in the Rhododendron Dell on the left-hand side of the entrance to the Bamboo Garden, the last surviving tree was uprooted. This group of Pines, originally four in number, was much beloved of artists. The oldest and largest specimen of Cratægus nigra in Kew, growing in the Thorn Avenue, was rent in two, and one of the trees in the curious circular group of Beeches, near the Lily Pond, was snapped off midway up the trunk.

Mr. J. Mayne.—We understand that Mr. J. Mayne, formerly of Bicton Gardens, Devonshire, who since his retirement from Bicton a year or so ago has been engaged in business, intends to seek another situation as gardener. Mr. Mayne has contributed to these pages weekly articles on several departments of practical gardening. We trust that he may soon find a suitable opening for the exercise of his well-known abilities.

International Show at San Francisco.—A Horticultural show will be held in connection with a general international exhibition, to be held at San Francisco in 1915, and to be known as the Panama-Pacific International Exhibition. It is proposed to build a horticultural palace providing an area for exhibition purposes of 207,000 square feet, and the building will be divided into three sections—tropical, sub-tropical and temperate. This building will be ready seven months before the exhibition opens, so that many of the plants may become more or less established in their exhibition quarters. It is intended that exhibits shall be staged not later than August, 1914, and the exhibition will be open to the public on February 20, 1915. In order to give added interest to this show the directors of the exhibition offer a prize of 1,000 dollars for the best new seedling Rose which has never been previously exhibited. This award will be in addition to any award granted by the jury, and the directors of the exhibition will reserve the right of giving to the Rose any name they may choose

Agricultural Education.—On behalf of the Horticultural Education Association, Mr. Walter P. Wright has addressed a letter to the local education authorities, in which he draws attention to proposals issued by the Board of Agriculture and Fisheries with a view to extending and systematising education in England and Wales. The Education Association in the first place complains of Horticulture being included in Agriculture, stating that Horticulture is distinct from Agriculture in its scope, purposes and methods. It suggests that school gardening, market gardening, and a considerable proportion of the operations of smallholders should be considered as coming within the scope of Horticulture. The Association further claims that a person qualified to give instruction and advice on agriculture and one who keeps in touch with the farming community cannot be expected to be able adequately to gauge the needs of Horticulture, nor to exercise an authority over instructors in Horticulture. A protest is raised against anything which would deprive Horticultural instructors of direct responsibility, and that would place them under an officer whose qualification for directing and supervising them could at the best be no more than academic. Officers appointed to give instruction in Horticulture should be engaged by and made directly responsible to the County Education authority. No farm institute which is to include Horticulture within its scope can be considered properly equipped unless it possesses a garden of at least three acres under the charge of a competent horticulturist.

Davidia involucrata flowering at Kew.—A plant of Davidia involucrata, var. Vilmoriana, is at present in flower in the Himalayan House, Kew Gardens, but there is only one solitary inflorescence. In *Gardeners' Chronicle*, June 2, 1906 (fig. 138), an illustration of Davidia involucrata was reproduced from a specimen that flowered in M. Maurice de Vilmorin's gardens at Les Barres.

Appointments.—The current issue of the *Kew Bulletin* announces the following appointments: Mr. A. H. Kirby, B.A., Scientific Assistant, Imperial Department of Agriculture for the West Indies, as Assistant Director of Agriculture in Southern Nigeria. Mr. F. W. South, B.A., Mycologist and Agricultural Lecturer, Imperial Department of Agriculture for the West Indies, as Chief Agricultural Inspector, Federated Malay States; and Mr. T. D. Maitland, Curator in the Agricultural Department, Southern Nigeria, as a District Agricultural Officer in the Uganda Protectorate.

A Gardener's Eldorado.—We sometimes flatter ourselves in this country that London is the best market in the world, and the idea receives considerable encouragement from the fact that the whole world appears anxious to contribute to the stores awaiting the patronage of the British purchaser. But so far as horticultural products are concerned, and, indeed, most other things that contribute to the amenities of life, the lovely city of Paris may often be compared favourably with our own metropolis. Take forced fruits, for example: On April 23 last we visited, in company with M. Georges Truffaut, of Versailles, the establishment of M. Gourlin in the Rue Gombourt, one of the first fruiterers in Paris. In this house there were Peaches, Nectarines, Strawberries, Grapes, Melons, Plums and most other kinds of hothouse fruits. The wholesale prices M. Gourlin had paid for these were as follows: For 20 Peach fruits, £8; single fruits of Strawberry, 2 francs (1s. 8d.); Cantaloupe Melon weighing 5 lbs., 55 francs (£2 5s. 10d.); and red Plums, 10d. each. M. Gourlin had received an order for 100 Peaches for an American liner, and was busy purchasing them wherever procurable. Of course, the date was early for most of the fruits mentioned, but it is refreshing to find that the early products of the gardener's art meet with the appreciation of the wealthy. Another fact in connection with the Paris market we referred to last week, namely, that English growers were sending to that city consignments of Orchids and Roses, and these flowers could be found in most of the high-class florists' shops.

Bordeaux Mixture for Potatos.—The value of Bordeaux mixture for combating late blight of Potatos has been demonstrated so often that it is scarcely necessary to refer to it again. Nevertheless, the ten years' experiments conducted by the authorities of the New York Agricultural Experiment Station give such an emphatic and affirmative answer to the question, "Does it pay to spray late varieties?" that a brief summary of the results may be useful. The experiments were of three kinds—trials in the Department, farmers' business experiments, and voluntary experiments. The first have extended over 10 years, the second over 9, and the third over 7 years. In every case a profitable increase of yield has resulted from the use of Bordeaux mixture. In the 10-year experiments the average for this period has been: at Geneva, N.Y., 3 sprayings, an increase of 69 bushels per acre; and 5 to 7 sprayings, 97.5 bushels per acre. In the farmers' business experiments, of which there were from 6 to 15 each year, the 9-year averages are 36 bushels per acre, which represents a profit of 58s. per acre. In the 205 volunteer experiments the average increase was 54 bushels per acre. The authors of the report point out that, whereas one spraying is better than none, several sprayings are advisable; that spraying *must not* be deferred until the blight has made its appearance, and that for the best results spraying should be continued as long as the plants are alive.

The "Botanical Magazine."—The issue for April contains illustrations and descriptions of the following plants:—

Sansevieria æthiopica, tab. 8487.—This species of Sansevieria has been in cultivation for more than a century, but up to the present time it has been confused with S. zeylanica from which, however, it is altogether distinct, having larger flowers, more numerous, shorter and thinner leaves with a whitish tip and red or whitish margin. The in-

florescence is from 16 to 30 inches long, and bears whitish flowers in clusters of four to six.

PYRUS IOENSIS, tab. 8488.—Judging from the *Botanical Magazine* plate, this is a remarkably handsome Crab, the large petals being a deep rose colour: a further attraction is the violet perfume of the blossoms. The species is said to be the latest of all to flower in the Malus group. Mr. BEAN strongly recommends the plant for garden purposes, especially for the fragrance of its blossom, which appear late in May and early in June. There is a double-flowered variety in cultivation, erroneously known as P. angustifolia fl. pl. and sometimes as P. coronaria fl. pl.

COCCULUS TRILOBUS, tab. 8489. This hardy climber has greenish flowers that are followed by bluish-black clusters of fruits. The foliage is elegant and the plant is recommended for furnishing tree-stumps, the growth twining itself tightly around the smaller branches. The species is perfectly hardy.

CISTUS LORETH ×., tab. 8490.—This hybrid Rock Rose has beautiful white flowers with a blotch of red at the base of each petal, and a cluster of yellow stamens. Its parents are Cistus ladaniferus and C. monspeliensis. The plant is perfectly hardy, and specimens at Kew have been unharmed by more than 20° of frost. The plant resents disturbance at the roots, and grows best in light, sandy soil in a sunny situation.

HYPERICUM KALMIANUM, tab. 8491.—This plant is a native of the great Lake Region of North-Eastern America, and was introduced to this country as far back as 1759. Of late years, however, it has been lost to cultivation in this country, plants of H. prolificum having been confused with it. The flowers are borne in clusters of seven to fifteen at the ends of the twigs, and, like most species of St. John's Wort, the petals are yellow.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

SULPHUR FOR CHRYSANTHEMUMS. — Like several of your correspondents, I tried Mr. Mëker's remedy for rust on Chrysanthemums. We inserted a batch of cuttings in soil with the sulphur added on December 22 last, but they all wilted in a few days. They were allowed to remain for three weeks, when the best of them were put into fresh compost of the ordinary mixture. They soon rooted, whilst the remainder in the sulphur soil gradually died. Although it might be an advantage in the after-potting, the practice is certainly a failure so far as cuttings are concerned. *Harry Low, Braemore Gardens, Garve, Ross-shire.*

ANEMONE BLANDA SCYTHINICA. — For some three weeks or so a patch of this plant a yard square has made a delightful picture with the rich gentian-blue of the buds and the white of the fully expanded flowers. This Anemone is one of the most beautiful of early spring flowers, and grows best in a light, well-drained soil. The plant increases from self-sown seedlings. Like the type A. blanda, the Grecian Windflower, it has tuberous roots, but A. blanda is usually earlier in flower, and always taller in growth. This year, however, the plants are blooming in company. It is highly probable that the variety is not well known, or it would be more extensively cultivated, since all who see it for the first time are attracted by its colouring—rich blue on the exterior of the sepals, and pure white within. *E. H. J.*

A NEW METHOD OF GROWING CERTAIN ROCK PLANTS.—I have been growing a considerable number of so-called Alpine plants for some years, and have met with the varying success that is everyone's lot. I do not possess a rockery in the ordinary sense, but I attain similar results by means of retaining walls some 3½ feet in height. When once a plant has fairly got established in the joint between two stones it probably does as well as on a rockery, sometimes better, but, of course, one can't have those cosy pockets in a wall that so greatly simplify cultivation of plants on a rockery. More particularly, I have found it rather hard to establish some of the smaller species, which on a wall are specially liable to attack by snails, slugs, and wood-lice. For one reason and another it occurred to me that I should attain increased success with certain species if I could bore holes right through some of the stones, and plant special treasures in such places. I put the problem before an intelligent ironmonger, who suggested an augur such as is used for drilling holes in free-stone, into which it is desired to insert wooden plugs or iron spikes. I therefore had three such augurs made, one to form a hole 1¼in. wide, another for a ¾in. hole, and the third for a hole ½in. in diameter. The last has a length of 12in., while the other two are 9in. long. Each fits into an ordinary brace, such as is employed for holding "bits" used for wood boring. I soon found, as I expected, that many of the stones were too hard to be easily pierced, but the walls contain quite enough so soft that I can bore right through to the soil behind, often in the matter of a few minutes. The length of the holes necessarily varies with the thickness of the stones, most of which, however, are about nine inches thick. I make the hole with a slight inclination downwards, so that water falling on the face of the stone tends to run into the hole. Moreover, the "dip" of the hole facilitates the operation of getting in the soil. I never use the largest augur for making the hole the whole way through, but it sometimes suits the habit of a plant to use the largest augur for the first two inches, and to complete with the middle-sized or smallest one. Generally, however, the hole is entirely made with the ¾in. augur, though in a specially hard or specially thick stalk it is often convenient to bore the last two or three inches with the ½in. augur. If it is thought that the effect of having the hole right in the centre of the face of the stone is a little stiff, it may be put to one side, or a little higher or lower. In the case of a stone with a face of one to two square feet, I sometimes insert more holes than one. Having made a few holes, I prepare some special soil, by passing it through a fine sieve, and having placed a handful of the soil in a "trough" made by bending a piece of tin along the middle as one would fold a sheet of notepaper, I hold the end of this trough at the entrance to the hole and push the soil in by means of a small rod of wood about the diameter of a thick lead pencil. How much soil shall be placed in a hole before the plant is inserted d pends on the root system of the plant. If o is dealing with a plant that has been prop gated in a pot 1½in. deep and about 1in. diameter, one fills up the hole within 1½in. the top, and, having consolidated the soil the desired degree, one simply plugs up the ho with the plant and attached soil, as it com from the pot. If one has adjusted the bore the hole to the size of the ball of earth on t plant, nothing could be more perfect than t fit that is secured. After I have put in t necessary soil, and before inserting the plan I generally fill up the hole with water, and allo a few minutes for the soil to absorb i I sometimes also introduce a layer, ½i in thickness, of finely-pounded glass, whic prevents worms working up through the soi and incidentally secures drainage and aeration Plants inserted as I have described have man advantages. If they like to be squeezed into narrow chink in a rock, that is precisely th position in which they find themselves. If the grow best by having the narrowest possibl cracks along which to send their roots one ca bore the hole only about half through the stone and then by means of an iron spike one can crack the stone and thus provide the minute fissures desired. Plants beloved by slugs are fairly safe on the face of a stone—much safer than in the line of bedding—and if one wants to make assurance doubly sure one can encircle the plant in a girdle of pepper, or of bird-lime or mustard, over which a little sand has been sprinkled for the sake of appearance. Then, again, minute plants like some Campanulas, Saxifrages, etc., show up extraordinarily well in their complete isolation. Of course, one would not take the trouble to make holes for the ordinary rank and file of rock plants, but there are many that promise with me to grow better in the position indicated than in any other way. Cushion plants like Draba imbricata, Androsace helvetica and Saponaria pulvinaris show up in most delightful fashion. Phyteuma comosum is in a thoroughly congenial situation, wedged into a crack and secure against slugs The small Dianthuses like nitida, Freynii, microlepis and Lereschi lend themselves well to such treatment, as do also all the choice Edraianthuses (Pumilio, dinaricus, etc.), Campanulas (Tommasiniana, Morettiana, Zoysii, acutangula, etc.), also the minute Saxifrages, such as squarrosa, diapensioides, etc. Then, again, the effect of large



[Photograph by W. J. Vasey. Copyright.

FIG. 133.—RHODODENDRONS SHOWN BY THE SOCIÉTÉ ANONYME HORTICOLE LOUIS VAN HOUTTE PÈRE AT THE GHENT SHOW. (See p. 313.)

rosette plants like Saxifraga longifolia, Carlina acaulis and C. acanthifolia is very striking. Other plants that I consider worth this trouble are Thlaspi limosellifolium, T. rotundifolium, Asperula Athoa, Petrocallis pyrenaica, Veronica cæspitosa and some of the choicer Violas and fissure-loving Primulas. Although with big boulders on a rockery the method may not be so easily practised, it is possible that good results might be got even if the rock was only bored into for 6in. or 8in. and a little grit was placed in the bottom of the hole to secure drainage. At all events, it is evident that by means of such holes a plant can be got into any exposure as regards sun and drip that may be desired, and it is not impossible that the cultivation of Eritrichium nanum may thereby be materially simplified, or, at least, so I venture to hope. *William Somerville, Oxford.*

Iris bucharica.—On p. 273 Mr. Wallace asks whether anyone can say if Iris bucharica seeds freely in this country. Here, at any rate, this most vigorous Iris usually sets seeds abundantly, and this year I have had at least 70 or 100 seedlings in flower, some closely resembling the type and some with flowers of a wholly yellow colour. Curiously enough, this year I find that my plants have set little or no seed. I only returned yesterday after an absence of some weeks abroad, and I can only imagine that it was the sharp frosts, which I am told occurred during my absence, that destroyed the flowers before the seeds had set. Some idea of the vigour of this Iris can be derived from the fact that I have now over 50 strong plants which have all arisen by division from two original bulbs which I purchased in 1906. A group of 30 or 40 plants in full flower is indeed a fine sight. *W. R. Dykes, Godalming, Surrey.*

Pea Thrips.—May I once more through your columns ask for assistance in an investigation into the Pea Thrips? Notes on the presence or absence of the pest in all parts of the country are required, and specimens if possible. If those willing to help will communicate with me particulars will be sent. Correspondents are specially wanted in the South-Western counties and Ireland. *C. B. Williams, John Innes Horticultural Institution, Manor House, Merton, Surrey.*

Anemone alpina.—Some of us have much to learn as to the best method of securing large stocks of this Anemone and A. sulphurea. I have just been pricking out some seedlings obtained from abroad. These are, I take it, from comparison with others of my own raising, the results of seeds sown in 1911. The pots in which they were sent me are a little over 2 inches high and wide, narrowing towards the bottom. Each pot had one crock in it, and the soil used seemed to be peat, leaf-mould and sharp sand. In this tiny space were the seedlings, ranging in number from 15 to 32, strong young plants with a most embarrassing amount of fibre, when one came to prick them out. It looked as if a bundle of seed had been plumped into each pot and left there for 18 or possibly 30 months. I am wondering whether the snow, which presumably covers them during some months of the winter, contributes largely to the success of the plan. In any case, I hope to try the experiment this season. *A. C. B., Park House, Reading.*

Sterilising Soil.—I was particularly interested in *Yorkshire Gardener's* note in last week's issue (see p. 287). Owing to the number of wireworms and eel-worms in the turf which we use for making vine borders and potting plants, and our failure to destroy them by using well-known pest destroyers, we were forced to experiment with heating the soil. Having no special apparatus for steaming it we fixed up in a corner of the garden a temporary furnace consisting of a number of bricks with a sheet of corrugated iron to act as a bed. On this we rigged a large box with top and bottom removed, into which, after damping them, we placed the turves with wet sacks on the top to keep in the steam. The fire, made of any old wood, was then lit, and the turves turned once to avoid burning. The result is most satisfactory. *W. Harry, Falconhyrst, Penarth, South Wales.*

Injury to Rhododendrons.—I noticed the reply to *H. J. S.*, on p. 289, and I think probably his Rhododendrons are suffering from Rhododendron Fly, which does considerable damage to the plants. The pest may be destroyed by the following specific:—7 lbs. of soft soap; 1 pint of paraffin, and 28 gallons of water. Mix the liquid well and keep it stirred. Use with Abol Syringe or Knapsack sprayer, and commence spraying at the end of May. All foliage upon the under side of which is found a black honey-looking deposit, should be syringed, as this deposit is the larvæ of the pest. *W. C. Slocock.*

SOCIETIES.

SOCIÉTÉ D'AGRICULTURE ET DE BOTANIQUE DE GAND.

THE GHENT EXHIBITION.

(*Concluded from page* 299.)

Hardy Rhododendrons.

Without its masses of Azaleas and Rhododendrons the Ghent Quinquennial Exhibition would be deprived of one of its chief attractions. That it was devoid neither of attractiveness nor of brightness will be admitted by every visitor to the recent show, at which, in fact, Rhododendrons and Azaleas were more numerous than on any previous occasion.

In most instances the Rhododendrons were arranged on the confines of the main hall. Pleasing landscape scenes had been painted upon the adjoining walls, so that the groups were set out in such a manner as to merge with a general picture. This was, on the whole, done with charming effect, and the background—in which large bushes of Rhododendrons were frequently depicted—gave one the impression of viewing a much wider expanse of ground than actually existed within the hall.

A large number of un-named seedlings were exhibited by various raisers, but so far as could be seen, nothing of a startlingly novel character was staged, but some of the well-known favourites were as prominent as ever. For instance, hardly a mixed group of Rhododendrons shown was without a specimen of Pink Pearl and White Pearl, than which it would be difficult to find at the present moment any two better varieties.

While, as has been pointed out over and over again, the Ghent method of arranging the same classes here, there, and everywhere over the whole exhibition has its great advantages from the spectacular standpoint, it cannot fail to be anything other than trying to the judges, and might, were the greatest possible care not taken, lead to very serious blunders in the judging. The Rhododendron classes were thus widely separated, and the jurors must have had great difficulty in comparing the merits of groups which were staged at such long distances apart.

M. Ch. Pynaert, nurseryman, of Ghent, exhibited a remarkably fine group of plants, consisting of 40 well-grown specimens in full flower, for which he received an award of a piece of silver plate valued 500 francs. The varieties of outstanding merit in this collection were Purity, Concessum, Félix Sauvage, Pink Pearl and White Pearl. This was one of the groups in which a painted background, representing a park-like scene, was quite in keeping with the Rhododendrons staged in front of it. The Société Anonyme horticole, Louis van Houtte Pere, was placed second in this class with a fine lot of plants very tastefully arranged (see fig. 312).

M. Charles Pynaert and MM. Bracke Freres, Loochristy, won first and second prizes respectively in the class for a group of 25 distinct varieties of well-grown plants. In M. Pynaert's collection, R. S. Halford, Mrs. J. Penn, Comte de Gomer and Pink Pearl were all fine examples of good culture.

A piece of silver plate valued 150 francs was secured by M. M. P. de Schryver, nurseryman, Loochristy, for an exhibit of 25 standard Rhododendrons. The individual plants were strong and healthy, but the flowers were, on the whole, somewhat small, although the inflorescences themselves were firm and compact. Among some of the best sorts shown in this group were Jewess, Cynthia, Hélène Waterer, Lady Armstrong and Pink Pearl. The second prize—a gold medal in this class was awarded to M. F. Spae, nurseryman, Melle. The latter competitor took first prize for a collection consisting of ten standards. Some of the best sorts were Pelopidas, Prince Camille de Rohan, and that peculiarly dark coloured variety, Baroness Lionel Rothschild.

For a collection of 30 new or recently introduced varieties, a gold medal valued at 100 francs was awarded to MM. Bracke Bros. Pink Pearl, White Pearl, Profusion and the Duke of York were without doubt the most striking of the lot. Only a single entry was staged in this class.

One of the most pleasing effects in the whole show was produced by the arrangement of 50 large specimen plants of the variety Prince Camille de Rohan. These showed just sufficient foliage to do away with that appearance of sameness which is so apt to appear in any group of flowering plants when it is confined to a single variety. Here, again, the scenic artist assisted the exhibit by providing a realistic background of trees and Rhododendron bushes. A gold medal was won by M. M. A. De Clercq-van-Ghyseghem, nurseryman, Ledeberg, for this group. An effect very distinct from the last was produced by M. Charles Vuylsleke, nurseryman, Loochristy, by his arrangement of 25 large specimens of Pink Pearl. These, instead of being placed against a wall, were arranged in the open, surrounded by walks and grass verges. As they had the appearance of being nothing but a mass of bloom, they were greatly admired on all hands, and thoroughly well merited the award of a gold medal, notwithstanding the fact that there was but a single entry in the class.

A silver-gilt medal was secured by Messrs. Sander & Sons, nurserymen, Bruges, for 12 pyramidally trained Rhododendrons—a rather unusual method of growing these plants. These, too, were covered with flowers, and showed every evidence of good culture.

Quite an unique and at the same time attractive method of arrangement was that adopted by Mme. Osterrieth-Mols, of Anvers, in setting out a varied collection of foliage and flowering plants, among which Rhododendrons took a prominent position. The plants were placed as if they were growing in the corner of an old garden, a walk leading to a ruined temple, bronze statues, rocks, and tiny pools of water were all turned to excellent account in producing a pretty picture. The whole thing was one of those instances where a perfectly incongruous mixture of plants and flowers, arranged with imagination and an eye to colour, can be made into a most pleasing picture. The fact that it would be utterly impossible to find a similar collection of plants growing in such proximity to each other in any part of the world would trouble none but the most pedantic spectator. To the average visitor it mattered little that Anthuriums and Hippeastrums were growing in beds surrounded by machine-mown grass, or that Primula obconica was throwing up a profusion of beautiful flower-heads through this same mown grass. Only the most matter-of-fact gardeners, too, would feel that there was anything wrong in the mixtures of New Holland plants, Palms, Guelder Roses, Asparagus plumosus, Hydrangeas, Rhododendrons, Aucubas, Ivies, Clematis, and choice Adiantum ferns. So long as the effect was artistic few would even give the fact of the impossibility of these plants growing under the same climatic conditions the slightest consideration. The artist was awarded a piece of silver plate for her exhibit, which was so greatly admired by visitors.

Hard-wooded Greenhouse Plants.

The species and varieties of hard-wooded greenhouse plants, still termed "New Holland plants," at the Ghent Show, were best exhibited by M. Firmin de Smet, Vinderhaute, the champion of many previous competitions. He was awarded the "Œuvre d'Art," valued 150 francs, for a collection of 50 plants, M. Jules de Cock, Meirelbeke, gaining the second prize. The Acacias were the more prominent plants in these collections, but a word of praise is deserved by the magnificent specimens of Leptospermum shown in this class and in similar classes. When the new crimson varieties we saw at Chelsea develop into such fine plants they should have a very rich effect. M. Firmin de Smet also won first prize in an amateurs' class for 25 plants, and M. Jules de Cock the first prize in a similar class for nurserymen.

Clivias.

Some excellent exhibits of Clivia were contributed to the show, and amongst the best was the collection of 20 grand plants shown by MM. BIER ET ANKERSMIT, Melle, the second prize going to a very good lot contributed by M. VAN DE PUTTE, Gentbrugge, who obtained the first prize for a group of 12 plants.

Hydrangeas.

In the great Azalea hall some of the gorgeous patches of colour belonged to the Hydrangeas (see Fig. 131), which were planted in large beds, and provided rich blues and pinks, as well as the paler shades of the newer varieties of the "Mouillère" type. M. JULES LOSSY-CNUDDE, Destelbergen, won the first prize of a gold medal for a collection of 100 plants of the hortensis and its varieties, and M. EM. LOSSY, Mont St. Amand, the second prize.

M. CH. HEMELSOET-LOSSY, Mont St. Amand, had the best group of 20 plants of H. rosea, and M. JULES LOSSY-CNUDDE the best group of 20 plants with blue flowers.

MM. E. MOUILLERE ET FILS, Vendome, France, exhibited beds of most beautiful Hydrangeas of the type connected with their name, but these were not entered for competition. The varieties were numerous, and all of them very pretty.

Lilacs.

The Ghent shows always bring plentiful displays of forced Lilac, and such was the case on the present occasion. The Continental system of culture and pruning produces thick stems, almost like walking sticks, with great inflorescences that are seldom seen in our own country. The best collection of 100 varieties was shown by M. FIL. STEPMAN-DE-MESSEMAEKER, Brussels, and in his collection we remarked a wonderful single variety, with exceedingly large, vinous-purple flowers; this was named Pasteur, and a double one of great merit was named Montaigne Blush. The same exhibitor won the first prize for a collection of 12 plants, with fine specimens.

Cinerarias.

Of the numerous exhibits of Cineraria the most effective were of the stellate type, and this section was shown in infinite variety. The best plants were contributed by M. EMILE COUMONT, Verviers, MM. VILMORIN-ANDRIEUX ET CIE, Paris, and M. FIRMIN DE SMET, and the School of Horticulture at Mons.

Hippeastrums and Cyclamen.

The exhibits of Hippeastrum, though creditable, were not above the average to be seen at the English shows. The best group came from the Société Anonyme Horticole, LOUIS VAN HOUTTE PERE, Gentbrugge, in a class for 75 plants, but M. V. DU PRE, Bruxelles, showed a fine collection of 25 plants. The only class for a group of Cyclamen brought a good group of 100 plants from M. AD. D'HONDT, Ghent.

Oranges in Fruit.

One of the features of the show consisted in the very fine exhibits of Citrus sinensis in fruit. The plants exhibited extraordinary good cultivation, and were literally loaded with fruit. Some of them were standards 3 feet to 4 feet in height, and they elicited unreserved admiration. The most successful exhibitors were M. A. SNOECK FILS, Meirelbeke, who won the first prize for 25 plants and 15 plants, and M. D. VERHOEVEN, Destelbergen.

Carnations.

Carnations were represented in considerable numbers, and most of the collections were contributed by our English growers. Mr. C. ENGELMANN, of Saffron Walden, was the most successful exhibitor in almost every class. He was awarded an Object of Art valued at 150 francs, for a collection of 24 varieties, and a medal for 24 flowers of a white Carnation, also another medal for 24 flowers of a rose-coloured variety, for a red variety, and for a collection of 12 varieties put into commerce since 1910, etc. Winners of second prizes included M. BOUCKENOOGHE (Société Horticole Yproise), M. EM. DRAPS-BOUDRY, and Messrs. WM. CUTBUSH & SON. In addition to the firms mentioned, Messrs. YOUNG & Co., Cheltenham, Messrs. STUART LOW & Co., Bush Hill Park, Mr. A. F. DUTTON, Iver, Buckinghamshire, and M. EUGENE DE WOLF, all contributed collections of Carnations, but not all of them were entered for competition. In nearly every case the excellence of the flowers was acknowledged by the award of a medal or medals.

A Dutch Exhibit.

One of the boldest features of the Azalea Hall was contributed by the Horticultural Tradesmen of Aalsmeer, Holland. This consisted of magnificent Lilacs, Hydrangeas of the Mouillère type, cut Roses, excellent Mignonette, and various other flowers of high-class quality, the most remarkable from the English point of view, being a considerable number of plants of Begonia Gloire de Lorraine in 5-inch pots. There are not many effective plants of this variety in England at the commencement of May, but those exhibited at Ghent were for their size as floriferous and beautiful as any seen in England in December. Altogether, the Aalsmeer exhibit was of the very best quality, and reflected the highest credit upon the Dutch growers. This exhibit was awarded a Work of Art valued at 500 francs, offered by M. ALFRED DE LANIER.

Historical Exhibit.

We alluded last week to a very interesting exhibit contributed by M. VICTOR HEURSEL. This was made in the last class of the schedule, which was arranged for a collection of 500 plants exhibited for the first time by the members of the Société d'Agriculture et de Botanique de Gand between February, 1809, and October, 1909. M. LEON TERTZWEIL offered a prize valued at 300 francs. It was interesting to note how many of the species in this group were amongst the best-known plants of the present day, and the collection illustrated a feature in the history of the Society, for it showed how instrumental it had been in bringing before the public new and rare plants from decade to decade. For instance, there was Pimelea spectabilis (1889), Choisya ternata (1870), Hydrangea hortensis, Clivia miniata, Agapanthus umbellatus, Agathea cœlestis, Cestrum elegans, and other species of Cestrum; Richardia africana (1826), Abutilon megopotamicum, Plumbago coccinea (1820), Strelitzia regina (1810), Escallonia macrantha (1852), Cytisus racemosus (1852), Pinus pinea, and Nephrolepis Pearsonii (1908). These are a few of the plants included in the 100 specimens exhibited.

Roses.

There were a very limited number of Roses shown, but one of the most important was that of M. LEON GROSJEAN, Bruxelles, who showed a very large triangular group of plants well grown in pots. Amongst the varieties were Orleans Rose, Crimson Rambler, Dorothy Perkins, White Dorothy, Petite Léonie, and many pot plants of various shapes. This exhibit was awarded a Work of Art valued at 500 francs, offered by M. FIRMIN DE SMET.

Messrs. J. BLAAUW & Co., Boskoop, Holland, exhibited some very pretty plants of Viburnum Carlesii in flower. See figure in *Gardeners' Chronicle*, May 30, 1908, p. 346. The flowers are pure white, produced in compact, almost flat heads, whilst the leaves are small, and rather greyish in appearance.

Stove Foliage Plants.

We remarked upon the stove foliage plants in our report last week, but there were so many plants of interest shown, plants which in all probability, owing to changes of taste, will not survive in gardens much longer, that we have thought it worth while to place them on record by giving a list of them. The names are those favoured by the Belgians, but where it has appeared desirable the name by which the plant is known in British gardens is added.

List of the species of Palms, Cycads, Aroids, and other interesting stove plants exhibited at the Ghent Quinquennial Exhibition:—

PALMS.—Acanthorhiza aculeata, A. Warcewiczii, Areca Alicæ, A. lutescens, A. Catechu, A. (Hyophorbe) amaricaulis, A. sapida, A. (Dictyosperma) alba, A. Ilsemannii, A. (Hyophorbe) Verschaffeltii, A. (Dypsis) madagascariensis, Actinorhytis calapparia, Astrocaryum Ayri, A. mexicanum, Arenga Engleri, Attalea compacta, Brahea (Erythea) edulis, B. havanensis, Bacularia monostachya, Calamus ciliaris, C. palembanicus, C. Laurentii, C. Lewisianus, Caryota Rumphiana, C. elegantissima, Ceroxylon niveum, C. andicolum, Chamædorea Sartori, C. graminifolia, C. corallina, C. elatior, C. pumila, Chamærops excelsa, C. Fortunei, C. humilis, C. stauracantha, Cocos Weddelliana, C. Bonnetii, C. insignis, C. Marie-Rose (*C. Procopiana*), C. plumosa, Corypha (Livistona) australis, Cyrtostachys Renda, Dæmonorops Hystrix, D. melanochætes, Didymosperma porphyrocarpon, Deckenia nobilis, Drymophlœus Zippelii, Elæis guineensis, Euterpe edulis, Geonoma Seemanni, G. Pynærtiana, G. imperialis, G. Spixiana, Kentia Belmoreana, K. B. var. pendula, K. Forsteriana, K. Wendlandiana, K. Macarthurii, K. Kersteniana, K. Sanderiana, K. Dumoriana, K. Wartelii, K. Lindeni (Kentiopsis), K. monostachya (Bacularia), K. australis, K. Lucianii, K. Albertii, Korthalsia Junghuhnii, Latania aurea, L. Commersonii, L. Loddigesii, L. rubra (Commersonii), Licuala grandis, L. horrida, L. peltata, Linospadix Petrickiana, Livistona altissima, L. australis, L. chinensis, L. Hoogendorpii, L. Jenkinsiana, L. Dournoviana, L. rotundifolia, Martinezia caryotæfolia, M. disticha, Maximiliana regia, Nannorhops Ritchieana, Nicholsonia Georgei, N. ferruginea, Oreodoxa oleracea Phœnix canariensis, P. Roebelini, P. rupicola, P. andamanensis, Phœnicophorum (Stevensonia), Pinanga Kuhlii, P. Micholitzii, Plectocomia elongata, Ptychosperma Alexandræ, Ravenia Hildebrandtii, Rhapis flabelliformis, R. humilis, Roscheria melanochætes, Sabal Blackburniana, Sagus Ruffia (Metroxylon), Stevensonia grandifolia, Socratea Forgetiana. Thrinax elegans (radiata), T. Martii, T. graminifolia (multiflora). Verschaffeltia splendida, Wallichia oblongifolia, W. caryotoides, Washingtonia robusta, and Zalacca edulis.

CYCADS.—Ceratozamia mexicana, Cycas circinalis, C. revoluta, Dioon edule, Encephalartos Altensteini, E. brachyphyllus, E. caffer, E. horridus, E. Laurentii, E. longifolius, E. Lehmanni, E. tridentatus, E. villosus, E. Vroomii, and Macrozamia Denisonii.

AROIDS.—Aglaonema Curtisii, A. Roebelinii, Alocasia agyræa, A. colossa, A. illustris, A. Kerchovei, A. Lindeni, A. Martin Cahuzac, A. macrorhiza, A. Micholitzii, A. Pucciana, A. Van-Houttiana, A. Veitchii, Anthurium Andreanum, A. acaule, A. cristallinum, A. Gustavi, A. Hookeri, A. Moritzianum (coriaceum), A. Scherzerianum, Dieffenbachia Bowmanii, D. Bausei, D. Fournieri, D. imperialis, D. Jenmanii, D. magnifica, D. Memoria-Cortii, D. picta, D. Rex, D. splendens, D. Sanderæ, Nephthytis picturata, Phyllotænium Lindeni, Philodendron Andreanum, P. corsinianum, P. gloriosum, P. Ilsemannii, P. Mamei, P. macrophyllum, P. ornatum, P. pertusum, P. Schottianum, P. Sellowianum, P. triumphans, P. Wallisii, Schismatoglottis Lavallei, S. L. oblongifolia, Spathiphyllum heliconiæfolium, S. picturatum, and Xanthosoma violaceum.

MARANTAS.—Albertii, argyræa, Bachemiana, Chantrieri Closoni, conspicua, erecta, fasciata, hieroglyphica, imperialis, illustris, insignis, Kegeljani, Lindeni, Louisæ, leopardina, Makoyana, Mazelii, mediopicta, musaica, orbifolia, Oppenheimii, Porteana, rosea-picta, regalis, Sanderiana, Vanderhecki, variegata, Veitchii, vittata, and zebrina.

VARIOUS GENERA.—Acanthus montana, Ananas sativus variegatus, Alpinia Sanderi, A. vittata, Aralia Andreana, A. reticulata, A. sonchifolia, A. Thibaudiana, A. trifoliata Lassonii, A. latifolia, A. triloba, A. Veitchii, gracillima, Billbergia Forgetiana, Carludovica atrovirens, C. plicata, Coccoloba pubescens, Columnea gloriosa, Curculigo recurvata variegata, Cyclanthus bipartitus, Cyanophyllum magnificum, Davidsonia pruriens, Dracæna Broomfieldii, D. Cantleyi, D. Deremensis Bausei, D. Godseffiana, D. Goldieana. D. regalis, D. Sanderiana, D. terminalis vars., Eucharis amazonica, Eugenia Glazioviana, Gloriosa Rothschildiana, Heliconia illustris rubricaulis, Kæmpferia pulchra, Panax Victoriæ, Palisota Pynærtii, Pandanus Veitchii, P. Baptistii, P. inermis, P. Butayi, P. graminifolius, P. pacificus, P. Sanderi, Pereskia Godseffiana, Pohlia condensata, Rondeletia speciosa, Rudgea macrophylla, Sanchezia nobilis, Sansevieria Laurentii, Schizophyllum pulchrum, Smilax argyræa, Tillandsia tessellata, Trevesia Sanderiana, Vanilla aromatica variegata, Vriesia Mœnsii, and V. Glazioviana.

English Exhibitors.

The English exhibitors at Ghent were as follows:— Sir JEREMIAH COLMAN, Bt. (Orchids), Messrs. CHARLESWORTH & Co. (Orchids), Messrs. WM. CUTBUSH & SON (Carnations), Mr. A. F. DUTTON (Carnations), Mr. C. ENGELMANN (Carnations), Messrs. SANDER & SONS (Rhododendrons and Azaleas), Messrs. STUART LOW & Co. (Orchids and Carnations), and Messrs. YOUNG & Co. (Carnations).

ROYAL HORTICULTURAL.

APRIL 29th.—Descriptions of the new plants exhibited at this meeting were printed in our last issue.

Floral Committee.

Present: H. B. May, Esq. (in the chair), and Messrs. Charles Blick, G. Reuthe, W. P. Thomson, Chas. E. Pearson, H. J. Jones, Wm. Bain, J. W. Moorman, Thos. Stevenson, R. C. Notcutt, J. W. Barr, C. R. Fielder, W. J. Bean, W. A. Bilney, John Green, Chas. T. Druery, John Dickson, C. Dixon, W. Cuthbertson, W. J. James, Chas. E. Shea, J. F. McLeod, R. C. R. Nevill, Wm. Howe, E. H. Jenkins, and B. Crisp.

Mr. H. BURNETT, Guernsey, again exhibited an astonishingly fine collection of fresh and sweetly-scented Carnations (Silver Flora Medal).

Messrs. ALLWOOD BROS., Haywards Heath, arranged splendid blooms of such Carnations as Triumph, Rose Pink Enchantress, and that splendid variety, Mary Allwood (Silver Banksian Medal).

Messrs. W. Wells and Co., Merstham, also showed Carnations, for which a Bronze Flora Medal was awarded.

Messrs. J. Piper and Sons, Bayswater, arranged a group of Rhododendron (Azalea) Maxwellii, a showy single purple variety with large flowers. (Silver Flora Medal.)

Messrs. Stuart Low and Co., Bush Hill Park, Middlesex, exhibited standard specimens of Rhododendron Pink Pearl, rich blue and white Hydrangea hortensis and various Ericas. (Bronze Flora Medal.)

Mr. Philip Ladds, Swanley, arranged huge trusses of Hydrangea Madame Mouillière amongst pink Stocks and other summer bedding plants (Bronze Banksian Medal).

Messrs. H. J. Jones, Ltd., Lewisham, displayed a large number of Zonal-leaved Pelargoniums, which showed excellent culture (Silver Banksian Medal).

Messrs. H. B. May and Co., Upper Edmonton, exhibited Gardenias, Hydrangeas, and Violas amongst greenhouse Ferns. Viola J. C. Rolands, rosy mauve, is a charming variety (Silver Banksian Medal).

Messrs. Wm. Cutbush and Son, Highgate, London, showed exceedingly good Carnations, Roses, and spring flowering Shrubs (Silver Flora Medal).

Messrs. James Veitch and Sons, Ltd., Chelsea, exhibited compact floriferous Nemesias in splendid colours. Adjoining these plants an interesting miscellaneous collection included Teucrium fruticans, Pentstemon Menziesii Scouleri, and various Primula species (Silver Banksian Medal).

Messrs. R. P. Ker and Sons, Aigburth Nursery, Liverpool, showed two dozen magnificent Hippeastrums (Amaryllis), for which a Silver Banksian Medal was awarded.

Messrs. Wills and Segar, Onslow Crescent, South Kensington, contributed flowering plants suitable for house decoration (Silver Banksian Medal).

Messrs. J. Piper and Son, Bishop's Road, Bayswater, arranged a fascinating rockery, in which were displayed blue Gentians, masses of Primula japonica, and Alpine Auriculas. Genista hispanica was a low mass of rich golden colour, well set off by an adjoining group of Primula viscosa. At the back tall, graceful bushes of double Cherry were very dainty and fresh (Silver Flora Medal).

The Wargrave Hardy Plant Farm, Ltd., Twyford, Berks, displayed masses of Aubretia in a low rockery.

Mr. James Box, The Lindfield Nurseries, Haywards Heath, Sussex, showed a large and very floriferous bush of the golden double Furze, together with other flowering shrubs at the back of a rockery exhibit (Bronze Flora Medal).

Mr. Clarence Elliott, Six Hills Nursery, Stevenage, exhibited excellent Gentiana acaulis in a well-designed rockery, which also contained a fine batch of Saxifraga bathoniensis (Bronze Banksian Medal).

Mrs. F. Lloyd Edwards, Bryn Olrog, Llangollen, showed an interesting selection of Saxifragas and Aubrietias (Bronze Banksian Medal).

Mr. M. Prichard, Christchurch, arranged a charming rock garden exhibit, prominently displaying Daphne Cneorum and various tall-growing Scillas (Silver Banksian Medal).

Rock garden exhibits were also made by Messrs. T. S. Ware, Ltd., Feltham (Silver Banksian Medal), Messrs. John Peed and Son, West Norwood, Messrs. Bakers, Wolverhampton; Messrs. Barr and Sons, Covent Garden; The Burton Hardy Plant Nurseries, Christchurch, Hampshire; Messrs. R. Tucker and Sons, Oxford; Messrs. Wm. Fells and Son, Hitchin, Herts; Messrs. G. and A. Clark, Dover; The Guildford Hardy Plant Nursery Co., Surrey; Messrs. Thompson and Charman, Adam Street, Adelphi, London; Messrs. Whitelegg and Page, Chislehurst; Mr. G. W. Miller, Clarkson Nurseries, Wisbech; and Mr. H. Hemsley, Crawley.

Messrs. Dobbie and Co., Edinburgh, showed a wide range of free-flowering bedding Violas. In another part of the Hall Messrs. Dobbie arranged a group of excellent Calceolarias of their Perfection strain (Silver Banksian Medal). Messrs. Carter, Page and Co., London Wall, London, also showed bedding Violas (Silver Banksian Medal).

Messrs. J. Cheal and Sons, Ltd., Crawley, made a noteworthy exhibit of forced shrubs, in which Spiræa arguta multiflora, Cytisus præcox, and Pyrus Malus atrosanguinea were especially floriferous (Silver Banksian Medal).

Mr. L. R. Russell, Richmond, Surrey, arranged a collection of such flowering shrubs as Lonicera Maackii, Clianthus puniceus, Choisya ternata, and Ceanothus Veitchianus, etc. (Silver Banksian Medal).

Messrs. Reamsbottom and Co., Geashill, King's County, Ireland, again showed exceptionally fine double St. Brijid Anemones (Silver Banksian Medal).

Anticipating the Spring Show of the National Rose Society, Messrs. Hobbies, Ltd., Dereham (Silver-Gilt Flora Medal), Messrs. B. R. Cant and Co., Colchester (Silver Flora Medal), and Mr. Elisha Hicks, Hurst, Berks, exhibited beautiful Roses.

Orchid Committee.

Present: J. Gurney Fowler, Esq., in the chair, and Messrs. Jas. O'Brien (hon. sec.), R. Brooman White, J. Wilson Potter, W. Cobb, R. G. Thwaites, T. Armstrong, J. Charlesworth, J. Cypher, J. E. Shill, A. Dye, W. H. White, W. Bolton, C. J. Lucas, Gurney Wilson, and Sir Jeremiah Colman, Bart.

Lieut.-Col. Sir George L. Holford, K.C.V.O., sent four exceptionally beautiful Orchids, the Odontoglossum amabile Zeus being given an Award of Merit, and the very handsome Cattleya Enid Westonbirt variety, which received a similar award March 17, 1908, was shown as an example of progress under good cultivation. The plant bore six magnificent flowers on the spike. Other handsome specimens from the Westonbirt collection were Cattleya Schroderæ Luna, a pretty blush-white form, and C. Prince Olaf Westonbirt variety (Parthenia Prince of Wales × labiata), of good form and delicate colour.

H. S. Goodson, Esq., Putney (gr. Mr. G. E. Day), sent Cattleya Mendelii Blanche, blush white with white lip; and a very fine Odontoglossum, with the general appearance of O. Wilckeanum, shown as C. Watsonianum, Goodson's variety (harvengtense × crispum). The original name is O. hellemense. Mr. Goodson also showed O. illustre Radium.

Sir Trevor Lawrence, Bart., K.C.V.O. (gr. Mr. W. H. White) showed two good specimens of his Brasso-Lælio-Cattleya Triune.

Pantia Ralli, Esq., Ashtead Park, sent Odontioda Vuylstekeæ, Ashtead Park variety, a showy, red form, obtained from Odontoglossum Pescatorei Veitchiana and Cochlioda Noezliana; and finely coloured varieties of Odontoglossum Aireworth and O. Doris.

G. W. Bird, Esq., Manor House, West Wickham (gr. Mr. H. Redden), showed Odontioda Kitty (Odontioda Wickhamensis × Odontoglossum ardentissimum), of a rich, claret-red colour.

Messrs. J. Cypher & Sons, Cheltenham, were awarded a Silver Flora Medal for an effective group of Odontoglossum crispum, Miltonia Bleuana, M. vexillaria, etc. Specially good was a selection of Masdevallias, including Houtteana, Shuttleworthii, Bocking Hybrid, and other seedlings, Cœlogyne nitida, Chondrorhyncha Chestertonii; a singular Eria of E. pannea class, but with orange-red flowers, Brasso-Lælio-Cattleya Leeana, and other hybrids.

Mr. A. W. Jensen, Lindfield, staged a neat group of his very fine strain of Odontoglossum crispum of the best type, Cattleya Mendelii and Oncidium Marshallianum, for which a Silver Banksian Medal was given.

Messrs. Hassall & Co., Southgate, were awarded a Silver Banksian Medal for a group of Lælio-Cattleya G. S. Ball, Miltonia vexillaria, and Odontoglossum.

Mr. C. F. Waters, Balcombe, was awarded a Silver Banksian Medal for a group of Odontoglossums, Cattleya Mendelii, C. Schroderæ, Miltonia vexillaria, and other showy Orchids of excellent quality.

Messrs. Jas. Veitch and Sons, Chelsea, showed Brasso-Lælio-Cattleya Gerald (B. L. Digbyano-purpurata × L. C. Bletchleyensis), a fine large flower of a soft rose-pink, the lip being the darker.

Messrs. Sander & Sons, St. Albans, showed Cattleya Mendelii Dreadnought, with large flowers, the sepals and petals of a rosy-lilac colour, the front of the broad lip violet-purple. Also Lælio-Cattleya Frederick Boyle, var. Kerchoveæ, a large, blush-white form.

Lord Grantley, Oakley Hall, Cirencester (gr. Mr. Mabbett), sent a plant of a reputed cross between Phaius Swinburnei Hort. and Chysis bractescens, but which, both in plant and flower, showed no departure from C. bractescens.

Narcissus and Tulip Committee.

Present: W. T. Ware, Esq. (in the chair), Miss Willmott, Messrs. W. B. Cranfield, H. V. Warrender, C. Bourne, F. Barchard, W. Goldring, W. A. Milner, F. Herbert Chapman, J. D. Pearson, G. W. Leak, P. Rudolph Barr, R. W. Wallace, W. Poupart, Joseph Jacob, and Chas. H. Curtis (hon. secretary).

Messrs. Barr & Sons, Covent Garden, London, included several vases of excellent Polyanthus Narcissus in their collection. Such varieties as Jaune à Merveille and Elvira are a great advance on the older sorts. The Poetaz and Barrii blooms were also very beautiful. Messrs. Barr also showed a gorgeous selection of May-flowering Tulips. (Silver-Gilt Banksian Medal.)

Messrs. R. & G. Cuthbert, Southgate, Middlesex, again displayed a large quantity of Darwin Tulips. (Silver-Gilt Banksian Medal.)

Messrs. James Carter & Co., Raynes Park, exhibited a spring garden embellished with Daffodils, Tulips, and flowering shrubs. (Silver Flora Medal.)

Messrs. R. H. Bath, Ltd., Wisbech, specialised the bright-eyed Barrii and Poetaz Narcissi, such varieties as Matchless Larissa, Sonata, Cassandra, and Will Scarlet, and Diana of the Incomparabilis section being magnificent. (Silver Flora Medal.)

Messrs. Sutton & Sons, Reading, showed such fine Daffodils as Persian Orange, Sidney, Evangeline, and Weardale Perfection in quantity. (Silver Banksian Medal.)

Messrs. James Veitch & Sons, Ltd., Chelsea, included Queen Alexandra, Tangerine, Peveril and Persian Orange in their exhibit of Daffodils.

Messrs. Cartwright & Goodwin, Kidderminster, arranged a collection of Daffodils in many varieties. (Silver Banksian Medal.)

The Rev. G. H. Engleheart, Dinton, Salisbury, again showed many fascinating unnamed seedlings, chiefly of the Poetaz and Barrii types.

Awards of the Spraying Trials.

A report of the spraying trials held at Wisley on the 23rd ult. was published in the issue for April 26, p. 274. The following recommendations of the judges have been approved by the Council:—

Syringes.—*Awards of Merit* to Four Oaks Undentable (Angle Bend excluded) and Abol Syringe (E. A. White, Ltd.). *Commended:* Corry's Syringe and Purser's Arnold Sprayer No. 2.

Bucket Sprayers.—*Award of Merit* to Boundary Co., Demon Continuous Spray Bucket Syringe.

Continuous Pumping Knapsacks.—*Awards of Merit* to Abol (E. A. White, Ltd.), and Two Continuous Knapsacks Eclair No. 1 and Etame (Cooper, Pegler and Co.). *Highly Commended:* Four Oaks Centre Knapsack Pump. *Commended:* Benton & Stone's Continuous Pumping Knapsack.

Large Pneumatic Sprayers.—*Highly Commended*: Hartjen Battery Filler and Holders.

Large Continuous Pumping Sprayers.—*Highly Commended:* Four Oaks Large Continuous Pumping Battle Sprayer, and *Commended:* Utility (Benton and Stone).

Hand Diffusers.—*Highly Commended:* Alpha Hand Diffuser, Alpha Extinguisher Co. *Commended*: Vermorel Hand Diffuser, Cooper, Pegler & Co.; Holder Hand Diffuser, Hartjen; Hand Diffuser No. 1,807, Benton & Stone.

Nozzles.—*Highly Commended:* Four Oaks Nozzles.

The Judges considered the provision of means of carrying accessory nozzles on the hand syringes would be a great improvement. None had such a provision. In using some spraying materials the provision of a strainer on the intake nozzle would be an advantage. *W. Wilks, Secretary.*

MANCHESTER AND NORTH OF ENGLAND ORCHID.

April 17.—*Committee present:* Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, J. Bamber, A. Hanmer, W. Hatcher, A. J. Keeling, J. Lupton, D. McLeod, W. Morgan,

C. Parker, F. K. Sander, H. Thorp, A. Warburton, E. H. Davidson, and H. Arthur (secretary).

A *Gold Medal* was awarded to Z. A. Ward, Esq., Northenden (gr. Mr. Weatherby), for a group of Odontoglossums of the O. crispum section.

Silver Gilt Medals to R. Ashworth, Esq., Newchurch (gr. Mr. Gilden), who staged a fine group; and A. Warburton, Esq., Haslingden (gr. Mr. Dalgleish), for a group of Odontoglossum crispum.

Large Silver Medals to Col. J. Rutherford, M.P., Blackburn (gr. Mr. Lupton), for a choice group composed principally of Cattleyas; and W. R. Lee, Esq., Heywood (gr. Mr. Branch).

Silver Medal to J. Lawson, Esq., Sharples, Bolton (gr. Mr. Pountain), for a group composed of very fine and well-flowered plants of Dendrobium Wardianum and Odontoglossums in variety.

Bronze Medals to Rev. J. Crombleholme, Clayton-le-Moors (gr. Mr. Marshall), and Messrs. A. J. Keeling & Sons, Bradford.

AWARDS.

First-Class Certificate.

Odontoglossum × *Wm. Thompson* (parentage unknown). A large flower, with wavy segments; and *Odontioda Wm. Thompson*, large flower, of good colour, both from Wm. Thompson, Esq.

Brasso-Cattleya-Laelia King Emperor (*Laelio-Cattleya calistoglossa* × *Brasso-Cattleya Veitchii*), a magnificent flower, with deep maroon band and yellow throat, from W. R. Lee, Esq.

Odontoglossum crispum militaris, a good round flower, very bright. From A. Warburton, Esq.

Odontoglossum crispum "Orchard Dene" variety. A large flower, fumbriated, and heavily blotched on sepals and petals, from Mr. E. H. Davidson.

Awards of Merit.

Odontioda Bradshawae variety "Hestia," and *O. Evadne*, both from W. R. Lee, Esq.

Odontonia Edna (*Odontoglossum Wilckieanum* × *Miltonia Warcewiczii*), *and Laelio-Cattleya Mrs. Temple "Ashlands" variety*, both from R. Ashworth, Esq.

Odontoglossum crispum variety "J. Howes," from Wm. Thompson, *Esq.*

Odontoglossum × *Dreadnought*, from Z. A. Ward, Esq.

Odontoglossum Aurora (*Rossii rubescens* × *Lambeauianum*), and *Odontoglossum crispum Rotunda*, both from Mr. E. H. Davidson.

Dendrobrium Harveyanum, from A. J. Keeling & Sons.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

Annual Meeting.

May 5.—The annual general meeting of the above Society was held in the R.H.S. Hall, Westminster, on Monday last, Mr. Chas. H. Curtis in the chair. There were also present:—Messrs. J. Hudson, C. F. Harding, J. Harrison-Dick, John Weathers, R. J. Frogbrook, E. Burge, A. Bedford, and about 60 members, with the treasurer and secretary. The annual report and balance-sheet were presented. The following are extracts from the report:—

EXTRACTS FROM THE REPORT.

The net number of members is 1,874; and the following table shows the additions made during each month: February (1912), 5; March, 0; April, 0; May, 1; June, 13; July, 205; August, 93; September, 36; October, 136; November, 57; December, 7; January (1913), 5; making a total additional membership of 558. Of this number, 62 have joined on the State side only; while 398 are ordinary, or voluntary members only.

The number of lapsed members is 43. Five members have died during the year. The total amount paid out to the nominees of deceased members was £148 10s.

The total amount of sick pay to benefit members during the year was £588 18s. 10d., as against £507 12s. 0d., an increase of £81 6s. 10d., but only £27 8s. 4d. more than two years ago.

The chronic sick pay amounted to £95 9s. 6d.

The total payments to the Benefit Fund were £2,194 0s. 2d., and the disbursements £1,400 7s. 2d.

Numerous members have taken advantage of Rule XIX., par. 3, which enables those who have reached the age of 60 to withdraw "twice the amount credited to their account as interest in the previous year."

Acting upon the advice contained in the quinquennial Actuarial Report published last year, the Committee discussed at several of its earlier monthly meetings the question of making a uniform allowance of 5s. to those of its necessitous members who are over 70 years of age. At the July meeting a proposition on this matter was passed to take effect as from January 1, 1913.

Subscriptions to the Benevolent Fund amounted to £232 3s. 4d., and the payments therefrom to £108 5s. 3d. (against £90 11s. 6d. in 1911).

The total management charges amounted to £418 0s. 7d., as against £222 7s. 6d. in 1911, and £222 9s. 7d. in 1910. But a sum of £128 16s. is recoverable from the Insurance Act Commissioners for administration expenses incurred on the State side of the Society's business.

In April the new ledgers referred to in last year's report were opened, and every balance from the old ledgers was transferred and checked by the auditors, it having been seven years since the work was necessary.

The repeated suggestions to the effect that members who are recovering from an illness should take advantage of the provisions of the Convalescent Fund have been better acted upon in 1912 than in some previous years. The amount of assistance from this fund was £6 10s., and payments thereto £7 12s. 3d.

The Report for last year alluded to the work of the Committee in regard to the National Insurance Bill then before Parliament. Since, this Bill became a law of the land, your Committee had then to consider the advisability of making the Society an Approved Society under the Act. On June 17, 1912, a special general meeting of the members was called, and was largely attended. The following resolution was then passed:—

"That this Special General Meeting of the United Horticultural Benefit and Provident Society agrees to make application to the Insurance Commissioners for approval under the National Insurance Act, and hereby empowers the Committee of Management to take all necessary steps forthwith to secure the same, and hereby agrees to adopt the Revised Rules and Tables now submitted to the meeting as the Rules for the future conduct of the business of the Society under the National Insurance Act, and the conduct of the ordinary business of the Society outside the Act, subject to such necessary amendments as the Commissioners may consider necessary."

The investments made by the Trustees during the year are as follows: £800 (New) Queensland 3¾ per cent.; £500 Queensland 4 per cent., and £1,200 London and South-Western Railway 3½ per cent., a total of £2,500, the purchase price for same being £2,333 15s.

Owing to advancing years, and the heavy increase of clerical work that the business of the Society now entails, the Committee had reluctantly to accept the resignation from the Secretaryship of Mr. William Collins, who celebrated his semi-jubilee in that office on February 12, 1912. Mr. Collins' services as Secretary terminated on September 9, 1912, but during the interim he has assisted Mr. A. C. Hill, whose appointment as Secretary, pro tem., was agreed to at the August meeting. The Committee desire to record their expression of the high respect in which Mr. Collins is held, of his unvarying courtesy, ever-willing service, and close application to his duties. The influence and membership of the Society have steadily increased during Mr. Collins' tenure of the Secretaryship. The Committee approve and support the testimonial that has been instituted in recognition of the work of Mr. Collins.

The Chairman, in moving the adoption of the report and balance sheet, referred to the large increase in the membership, also to the advantages of the Society to members when reaching the age of 70 years. Referring to the Management Fund, he explained the sum recoverable from the National Insurance Commissioners. He moved that the report be adopted, and this was seconded by Mr. Harrison-Dick and carried unanimously. The Chairman announced the retirement of the treasurer (Mr. W. P. Thomson), and Mr. T. Winter was elected treasurer for the ensuing year. The retiring members of the committee were re-elected, and Mr. W. P. Thomson appointed a member of this body. The late secretary (Mr. W. Collins) was presented with a gold watch and chain and an illuminated address. In making the presentation, the Chairman expressed the hope that Mr. Collins might be spared long to wear the watch. Mr. James Hudson and Mr. J. Wheeler spoke in praise of Mr. Collins' services, which had extended over a period of 25 years. Mr. W. Collins thanked the members for their gifts and kind expressions. Mr. A. C. Hill, who has officiated as secretary since September last, was elected secretary.

SCOTTISH HORTICULTURAL.

On April 26, on the invitation of Mr. C. W. Cowan, more than 100 of the members visited Dalhousie Castle to inspect the collections of Daffodils, including some fine seedling varieties raised by Mr. Pirie, the gardener. Many of the Daffodils were growing in association with grass, including masses of Trumpet varieties, Emperor, Empress, and Glory of Leiden. Primroses and other spring flowering plants are also extensively naturalised at Dalhousie, whilst in the garden proper there is a large and varied collection of herbaceous plants.

EDINBURGH BOTANICAL.

April 10.—The sixth meeting for the session was held on this date, Mr. T. Bennet Clark in the chair.

Professor Bayley Balfour gave an account of the Primulas of the sinensis section, illustrating his remarks by living plants, dried specimens, and photographs. The section contains the well-known Primula obconica, and among others Primula sino-Listeri, a new Chinese species of considerable merit. The majority of the species come from China, but the outliers are found in the Himalaya and Manipur. They are all closely allied. Mr. James Fraser showed Fumaria purpurea, Pugsley, and other plants from Wigtownshire, new records for the county. Mr. James M'Andrew showed Coronilla varia, Linn., and Bromus inermis, Leyss, from Midlothian and Fifeshire. Mr. W. W. Smith exhibited Pleurospermum amabile, Craib et Sm., a beautiful new umbellifer from the Chumbi Valley, Tibet. Dr. Malcolm Wilson showed Ustilago Vaillantii, Tul., on Chionodoxa Luciliae, Boiss., a host which has not previously been recorded for this fungus.

Among the plants in flower shown from the Royal Botanic Garden were the following:—Alyssum pyrenaicum, Lap.; Cardamine rhomboidea, D.C.; Crenularia eunomoides, Boiss.; Cytisus Beanii, ×; Gaultheria Forrestii, Diels., one of the finest flowering shrubs introduced for Bees, Ltd., by Mr. Forrest from Yunnan, the racemes of white flowers being 8-10 inches long; Saxifraga Eastwoodæ, Small, an American Saxifrage of the boraphila section, Ranunculus Munroi, Hook, f. var. dentatus, a New Zealand plant with large yellow flowers; Roscoea cautleoides, Gagnep. var. lutea, a delightful acquisition from Yunnan, the result of Mr. Forrest's collecting; there is a purple-flowered form also in cultivation; Saxifraga lilacina, Duthie, a Kabschia Saxifrage from Kumaon introduced by Kew in 1900, not yet common in gardens—recent explorations in China show that the section Kabschia occurs also there in S. pulchra, Engler, also now in cultivation; Suksdorfia violacea, A. Gray, a purple-flowered Saxifragaceous plant which gives promise of being useful on the rockery; Thlaspi Kovatsii, Heuff.; Thlaspi rivale, Presl.

NATIONAL ROSE.

Spring Show.

May 1.—If there existed any forebodings concerning the wisdom of holding a Rose show on May Day they were dispelled long before the opening hour, for at 12 o'clock there was a long queue of members waiting to avail themselves of the hour's private view, and a few minutes after the doors were opened the hall was more than comfortably filled with visitors. In some classes the entries were few, but on the whole there were more than might have been expected, and the quality of the exhibits reached a high degree of excellence. The "New Roses" classes attracted the customary stream of enthusiasts, and as there were three gold medals, one silver-gilt medal, and one silver medal awarded, the inspection entailed a deal of patience. The hall soon became uncomfortably warm, and before one o'clock many of the blooms had faded. As usual, the arrangements worked smoothly, reflecting credit on the hon. secretary (Mr. Edward Mawley) and his staff. The thanks of the press are due to Mr. Frank Reader, of the R.H.S., who circulated an excellent official list of awards and otherwise materially assisted in making this first spring Rose show a success.

Nurserymen's Classes.

Of the three exhibits of groups of pot Roses arranged in spaces not exceeding 250 square feet, that shown by Messrs. Paul & Son, Cheshunt, was decidedly the best. This imposing display was characterised by healthy, floriferous plants and artistic arrangement. Tall, shapely, weeping standard Polyantha Roses were placed at unstudied intervals above a groundwork of dwarfer, large-flowered Roses. Amongst the cluster Roses, Cuckoo's Mate, a very free single white variety, faintly flushed with pink; Wichmoss (Wichuraiana × Common Moss), semi-double, pale-pink flowers 2¼ inches across, which

have the Moss perfume; Minnehaha, Excelsa, and Farquhar, all demanded admiration. Magnolia, a full lemon-tinted bloom; Othello, darker and richer than Richmond; and Souvenir de G. Prat, long, shapely buds with yellow bases, should become popular.

The second prize was awarded to Messrs. Hobbies, Ltd., Dereham; 3rd, Mr. A. Turner, Slough.

The first prize for a group of pot and cut Roses was won by Messrs. A. G. & C. Allen, Earlham, Norwich. Splendid weeping standards, with masses of flower, which were the feature of this exhibit, were fully equal to any unforced specimens at the height of the season. Amongst the more recent introductions, Beauté de Lyon, with vivid coral-red colouring, and Lady Pirrie, a beautiful coppery-salmon H.T. variety, were charming; 2nd, Messrs. Ben Cant & Sons, Colchester, in whose group specimens of the Austrian Yellow and Austrian Copper Briars received a deal of admiration. A new climbing Polyantha variety named Sweet Pea was exceedingly floriferous, but the reason for the name was not apparent; 3rd, Messrs. Wm. Cutbush & Son, Highgate, who arranged an exceedingly effective group solely with Polyantha varieties. The groups of cut Roses, arranged on staging 20 feet long by 3 feet wide, were especially effective. Two of the groups were so dissimilar in their composition and arrangement, and of such excellence that equal 1st prizes were awarded. Messrs. Geo. Mount & Sons, Canterbury, specialised in large stands of Frau Karl Druschki, Ulrich Brunner, Mrs. J. Laing, Liberty, Richmond and Sunburst, whilst the leading feature of the group contributed by Messrs. G. Prince, Oxford, was the pillars of Wichuraiana hybrids, such as Dorothy Perkins, American Pillar and Crimson Rambler. Smaller vases contained the fragrant Ellen Poulsen, Rayon d'Or, Juliet, and other varieties; 3rd, Messrs. B. R. Cant & Sons, who showed stands of splendid Anna Olivier, Jessie and Silver Moon, a very large single Macartney-like Rose.

For 18 standard Roses the 1st prize and Silver-gilt Medal were won by Messrs. Paul & Sons, Cheshunt. The plants were splendid examples of cultural skill; the foliage was dark green and the flowers borne high above it on stout stalks. The best varieties were Capt. Hayward, Hugh Dickson, Mrs. G. S. Crawford, Laurente Carle, Eugene Boullet and Frau Karl Druschki; 2nd, Mr. A. Turner, whose best examples were Souvenir de P. Notting, Mrs. S. Crawford and Caroline Testout.

Messrs. Paul & Son were the only exhibitors of 9 weeping standards in pots, and these floriferous specimens, from 7 to 9 feet high, arranged in a circle in the centre of the hall, made a splendid show. Messrs. Paul were also awarded the 1st prize for 50 pots of dwarf Polyantha Roses; 2nd, Mr. C. Turner.

Exhibition Roses.

Unfortunately there was only one exhibitor of 36 blooms in not fewer than 24 varieties shown in exhibition boxes, Messrs. B. R. Cant & Sons, Colchester, and they were awarded the 1st prize. It was an astonishingly fine exhibit of the following varieties:—Bessie Brown, Ulrich Brunner, Caroline Testout, Elizabeth, Frau Karl Druschki, Claudius, Hugh Dickson, Mrs. E. Mawley, White Maman Cochet, J. B. Clark, M. Cochet, Mme. M. Soupert, Lady de Bathe, W. Shean, Bridesmaid, S. M. Rodocanachi, Florence Pemberton, Colcestria, St. Helena, Souvenir de P. Notting, The Bride, Dean Hole, J. L. Mock, Killarney, Duchess of Wellington and Frau Lilla Rautenstrauch. There was very fair competition in the class for 18 blooms in not fewer than 12 varieties. Messrs. A. Dickson and Sons won the first prize, and showed good blooms of such varieties as C. W. Cowan, Mrs. Foley-Hobbs, Mrs. Wilford Lloyd, and Mary Greer, a new lemon-yellow H.T. Rose; 2nd, Messrs. G. Mount and Sons. Messrs. G. Mount & Sons were awarded the first prize for 12 vases of distinct varieties, a really splendid collection, which included Captain Hayward, Abel Chatenay, Sunburst, Ulrich Brunner, Richmond, Liberty, and Mrs. J. Laing. The first prize for 6 varieties in vases was awarded to Mr. W. Tayler, Hampton, whose best vases contained Caroline Testout and Mrs. R. G. Sharman Crawford. Unlike the summer and autumn Rose shows, the present exhibition did not induce any competition in the classes for baskets. Messrs. G. Mount & Sons, who showed in the class for five baskets, were the only exhibitors, and they deservedly received the first prize.

Amateurs' Classes.

The only exhibit of a group of Pot Roses, arranged in a space of 40 square feet, was an especially praiseworthy collection. It was difficult to realise that the Gold Medal group shown by Jas. Brown, Esq., Longford, Heaton Mersey, had been brought from the North of England, the plants and blooms were so fresh. All the units of this representative collection were so good that it is difficult to select any for special mention, but the plants of Mrs. J. Laing, Abel Chatenay, Duchess of Wellington, and a dwarf standard Frau Karl Druschki were probably the very best.

There was no large group of cut Roses in this section of the show, but 4 exhibitors competed in the class for a smaller group. Here the first-prize arrangement of Gordon Clarke, Esq., Leatherhead, was so good that a Silver-gilt Medal was added to the award (Richmond, Sunburst, Blush Rambler and Philadelphia Rambler are a few of the varieties so well shown); 2nd, H. R. Darlington, Esq., Potters Bar; 3rd, J. Brown, Esq., who, the only exhibitor, was awarded the first prize in the class for 12 blooms in exhibition boxes, the flowers of Mrs. J. Laing and the Lyon Rose being excellent.

Of the 6 collections of 6 blooms in not fewer than 4 varieties, the best was shown by H. R. Darlington, Esq., who showed a magnificent bloom of Souvenir de Pierre Notting; 2nd, Dr. Smith, Mapperley, Nottingham; 3rd, P. F. Davis, Esq., Burgess Hill. Gordon Clarke, Esq., who showed Frau Karl Druschki, was awarded the first prize for 6 blooms of any variety.

For 5 varieties, 3 stems of each, in vases, Jas. Brown, Esq., who had a vase of beautiful C. Mermet, was awarded the first prize; 2nd, Gordon Clarke, Esq., whose best vase contained Catherine Mermet.

The first prize basket of one variety of cut Roses shown by Conway Jones, Esq., Gloucester, was of such merit that a Silver Medal was added to the prize (the variety shown was Anna Olivier); 2nd, Jas. Brown, Esq., with Frau Karl Druschki. Mr. Brown was awarded the first prize for a pleasantly arranged basket of mixed varieties of cut Roses.

The Ladies' Classes.

The artistic section was a trifle disappointing. There were 6 decorated dinner tables and 9 vases of cut Roses, but the arrangements were very conventional, and in many cases stiff. In the Dinner Table class the first prize was awarded to Mrs. A. Robinson, Park Hill, Carshalton, who employed Madame Abel Chatenay Rose, but the centre was too crowded to be really effective; 2nd, Mrs. A. D. Ruff, Sharnbrook, Beds., who also used the same variety; 3rd, Mrs. A. E. Brown, Brokes Edge, Reigate, whose arrangement of Sunburst pleased us the most.

New and Seedling Roses.

The entries in the class for not fewer than 6 blooms of any new seedling Rose or distinct sport so impressed the judges that they awarded 4 gold and 2 other medals. The exhibits in this class (16) must be either not yet in commerce or not first distributed earlier than November, 1912. In class 15, twelve blooms of distinct varieties, which have been put in commerce since the beginning of 1910, must be shown, and here only one exhibit, that of Messrs. Alex. Dickson & Sons, was considered worthy of notice. In this first-prize collection the blooms of Lady Greenall (H.T.), Mrs. Foley Hobbs (T.) and Alex. Hill Gray (T.) were especially fine. The not unnatural inference is that of the over 400 listed "New Roses" exceedingly few are worthy of extended culture; but as this is the first spring show it is a debatable point, nevertheless very few of those which were grown proved to be good enough for exhibition.

In the class (7) for 9 pots of New Roses a similar state prevailed, and only the exhibit of Messrs. Alex. Dickson & Sons was found worthy. In this collection, which received a Gold Medal, the variety Mrs. C. Hall dwarfed all the others. The pink-flushed globular blooms are very large and of perfect form. C. W. Cowan (very deep cerise pink), Melody (medium shade of yellow), Mrs. Foley-Hobbs (palest lemon centre, flushed with apricot) and the gold-medal variety Mrs. Forde were the next best.

AWARDS.

Gold Medal.

Lady Plymouth (T.).—A very large pale-yellow globular Rose, with stout petals, which are reflexed at the edges. The blooms stand up well on stout stalks, and appear likely to travel without injury.

Mrs. Forde (H.T.).—The delicate colouring of this beautiful variety is suggestive of Souvenir de la Malmaison at its best. It has good foliage and stout stems. Both of these varieties were shown by Messrs. Alex. Dickson & Sons.

Madame Edouard Herriot (H.T.). — (See *Gardeners' Chronicle*, Supp. June 8, 1912, Fig. 30.) The colour of this striking variety remains as elusive as at the Chelsea International Show, but it was shown in much better condition than was the case last year. The pink sheen on the expanded blooms is very charming. The robust-looking buds are of a deep rich cherry-orange colour. Shown by Mr. George Beckwith on behalf of Mr. J. Pernet-Ducher.

Silver-Gilt Medal.

Mrs. George Beckwith.—Although described as being an improved Rayon d'Or, the appearance of this flower suggests rather a cross between that variety and Maréchal Niel. The foliage and curved spines also seem to indicate a relationship to the last-named variety. The round rich yellow blooms are well set on stout stalks, and the foliage is exceedingly good. Shown by Mr. Geo. Beckwith.

Silver Medal.

Willowmere.—This decorative Rose may best be described as being a Madame Abel Chatenay with the sheen of the Lyon Rose. Shown by Mr. George Beckwith.

Of the new varieties which did not receive recognition, Oracenta, a so-called pink Druschki, which possesses a delicious fragrance; Susie, a salmon pink Polyantha; and Constance, a rich yellow H.T. Rose, are worthy of mention.

NATIONAL AURICULA AND PRIMULA (SOUTHERN SECTION).

April 29: Although the exhibits of Auriculas were not so numerous as in some previous years, the quality of the flowers was above the average.

In the class for 12 dissimilar Auriculas Mr. James Douglas, of Great Bookham, was awarded the first prize, and his blooms were easily the best in the class. The variety, Flame, is well named, and was in striking contrast to such green-edged varieties as George Lightbody, Marmion, and Guy Cranfield. Sunray is a beautiful yellow self, and the dark purple Mikado is another fine self Auricula. The second prize was awarded to Messrs. Phillips & Taylor, Bracknell, whose best plants were Dr. Horner, Harrison Weir and Mrs. Potts; 3rd, Mr. W. M. Shipman, Altrincham.

Mr. Douglas also showed the best 6 dissimilar Auriculas, and the exhibit contained in William Smith the Premier Show Auricula. Queen of Spain (rich maroon self) and Harrison Weir were also very fine; 2nd, Messrs. Phillips & Taylor; 3rd, Mr. W. Shipman.

Mr. W. B. Cranfield, Enfield Chase, was the most successful competitor in the class for 4 dissimilar Auriculas, his outstanding plants were Miss Prim, Harrison Weir and Mrs. Henwood; 2nd, Mr. F. W. Price, Beckenham.

In the class for 2 dissimilar varieties, Mr. F. W. Price, who won the first prize, showed in Mrs. Henwood and Olympus two fine, green-edged flowers; 3rd, Mr. W. B. Cranfield. The best green-edged variety was Mrs. Henwood, shown by Messrs. Phillips & Taylor, and this fine variety also shown by the same firm, won the second prize. There were 11 exhibits in the class for one grey-edged Auricula, where Mr. Douglas won the first and second prizes with plants of the variety Marmion. Acme, shown by Mr. Douglas, was decidedly the best white-edged variety; 2nd, Mr. Shipman, who showed a pretty little plant of Conservative.

There was not much variety in the class for self-coloured flowers. Mr. Douglas was placed first with a good plant of Harrison Weir; and 2nd with the variety, Mrs. Phillips.

In the class for 4 Show Auriculas, restricted to competitors who have never won a prize, the premier award was made in favour of Mr. W. Nash, Epsom.

As in the leading class for Show Auriculas, Mr. James Douglas was the most successful exhibitor in the largest class for Alpine varieties. His 24 plants were superb, and the only fault, if it be a fault, was that one variety, Argus, was repeated rather too often, but the trusses were large and the pips good. This collection also contained splendid examples of Prime Minister, Golden Dustman, Phyllis, and the Alpine variety Mrs. James Douglas; 2nd, Messrs. Phillips & Taylor, whose flowers were bright and fresh, the outstanding varieties being The Queen, Kathleen and Triumph. Mr. Douglas also showed the best 12 Alpines, whilst the best 6 Alpines were shown by Mr. F. W. Price, who also won the first prize for 4 varieties.

The best single specimen of an Alpine variety with gold centre was Duke of York, shown by Mr. J. T. Bennett-Poe. The finest white or cream-centred Alpine was Argus, shown by Mr. A. S. Hampton.

Mr. J. Douglas won the first prize in the class for 12 Auriculas, arranged in a tasteful manner.

Messrs. Phillips & Taylor made a very interesting exhibit in the class for a group of species or varieties of Primulas or Auriculas in a box not exceeding 12 superficial feet, and were deservedly awarded the first prize.

The exhibits in the classes for Polyanthuses were nearly all exceptionally fine, and presented a very gay and attractive appearance. Mr. S. Mortimer, Farnham, won the first prize in the larger class. The best single specimen was shown by Mrs. Milner, Sheffield, who also showed the best 12 Primroses.

Mr. Shipman won the first prizes for green-edged, grey-edged, and white-edged varieties (seedlings), whilst Mr. Langride showed the best self Auriculas.

Both of the premier Auriculas in the show were contributed by Mr. James Douglas. The Show Auricula was William Smith, a smooth, green-foliaged variety, with green-edged flowers which have the desired broad distinct circle of white "paste"; and the Alpine was Mrs. James Douglas, a very beautiful flower with a large white band and shades of purple.

Mr. Shipman again won the Douglas Memorial Cup, which is offered to the most successful amateur exhibitor in Class 1, and Mr. Shipman also won the Silver Medal of the R.H.S., offered as a first prize in the class for 4 Fancy Seedling Auriculas raised from seed presented to members by Mr. James Douglas.

First-Class Certificate.

A first-class certificate was awarded for the following variety: — *Margaret Collins*, a very beautiful gold-centre Alpine with reddish-maroon shading.

THE WEATHER.

THE WEATHER IN WEST HERTS.

Week ending May 7, 1913.

A cold, wet and sunless week.—On the whole, this was rather a cold week. On three days the temperature in the thermometer screen did not rise above 54°, and on the coldest night the exposed thermometer registered 7° of frost. The ground has become colder, and is now 1° colder at two feet deep, and 3° colder at one foot deep, than is seasonable. Rain fell on five days, and to the total depth of over an inch. The greater part of that amount was deposited during the night of the 3rd inst., when rain fell continuously and sometimes heavily from 7 p.m. on the 3rd to 9 a.m. on the 4th, or for fourteen hours. During that time three-quarters of an inch of rain fell—making this the heaviest fall in any day or night since September 29, or for over seven months. During the week 3½ gallons of rainwater has come through the bare soil percolation gauge, and 4 gallons through that on which short grass is growing. The sun shone on an average for only 3½ hours a day, which is 2½ hours a day short of the usual duration of bright sunshine at the beginning of May. Calms and light airs as a rule prevailed during the week—the direction of these light airs being mostly some southerly point of the compass. The mean amount of moisture in the air at 3 o'clock in the afternoon exceeded a seasonable quantity for that hour by 9 per cent. A selected lilac tree in my garden came first into flower on the 7th inst., which is four days earlier than its average date for the previous twenty-seven years, but a week later than last year.

MARKETS.

COVENT GARDEN, May 7.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general averages for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—Eds.]

Cut Flowers, &c.: Average Wholesale Prices.

	s.d.	s.d.
Anemone, St. Bridget, per doz. bunches ...	3 0	—
Arum (Richardias)	3 0-	4 0
Carnations, per dozen blooms, best American varieties ...	1 6-	2 0
— smaller, per doz. bunches...	12 0-	15 0
— Carola (crimson), extra large	2 0-	3 0
— Malmaison, p. doz. blooms:		
— — pink	6 0-	8 0
Eucharis, per doz.	3 0-	—
Forget-me-nots, per doz. bunches	3 0-	4 0
Gardenias, per box of 15 and 18 blooms... ...	1 6-	2 0
Gerberas, per doz. blooms... ...	2 0-	2 6
Gladiola, The Bride	12 0-	15 0
— Blushing Bride	8 0-	12 0
— Peach Blossom	10 0-	12 0
Gypsophila, white	3 0-	6 0
— pink	3 0-	4 0
Iceland Poppies, per dozen bunches ...	4 0-	5 0
Iris, Spanish, per dozen bunches	9 0-	15 0
Lilium auratum, per bunch ...	4 0-	4 6
— longiflorum, per doz., long	3 6-	4 0
— — short ...	3 0-	3 6
— lancifolium album, long ...	2 6	—
— — short ...	1 6	—
— — speciosum		
— rubrum, per doz., long ...	2 6	—
short ...	1 0-	1 3
— candidum, per bunch, long ...	1 9-	2 0
per doz. short	1 3-	1 6
Lily of the Valley, per dozen bunches:		
— extra special..	18 0-	21 0
— special... ...	15 0	—
— ordinary ...	10 0-	12 0
Mignonette, per doz. bunches ...	4 0-	5 0
Narcissus Poeticus	1 6-	2 0
— double white...	3 6-	4 0
Orchids, Cattleya, per doz. ...	12 0	—
— Cypripedium	3 0	—
— Odontoglossum crispum ...	4 0	—
Pæonies, per doz. Blooms ...	1 0-	1 6
Pelargoniums per dz. bunches White... ...	4 0-	5 0
Double Scarlet	10 0-	12 0
Roses: Catherine Mermet ...	2 0-	3 0
— CountessDerby	—	—
— Frau Karl Druschki	2 0-	3 0
— Général Jacqueminot ...	1 0-	1 6
— Innocence ...	2 0-	2 6
— Joseph Lowe..	2 6-	3 0
— Kaiserine ...	1 6-	3 0
— Lady Hillingdon	1 6-	2 6
— Liberty ...	1 6-	4 0
— Madame A. Chatenay ...	1 6-	3 0
— Maréchal Niel	1 6-	2 6
— Maryland ...	1 0-	1 6
— Niphetos ...	1 6-	2 0
— President Carnot	2 0-	2 6
— Prince de Bulgaria	3 0-	4 0
— Richmond ...	1 6-	3 6
— Rose Queen ...	3 0-	4 0
— Sunburst ...	3 0-	5 0
— Sunrise ...	1 0-	1 3
— W. A. Richardson	1 0-	1 6
Spiræa, per doz. bunches ...	5 0-	6 0
Stephanotis, per 72 spray	2 6-	3 0
Sweet Peas, per dozen bunches:		
— white ...	2 0-	3 0
— coloured ...	6 0-	10 0
Tulips, per dozen bunches:		
— white ...	10 0-	12 0
— Darwin, all shades	12 0-	15 0

French Flowers: Average Wholesale Prices.

	s.d.	s.d.
Lilac, White, per bunch	3 6 -	4 0
— mauve... ...	5 0	—
Marguerite, yellow, per dozen bunches ...	1 9 -	2 0

Cut Foliage, &c.: Average Wholesale Prices.

	s.d.	s.d.
Adiantum Fern (Maidenhair), best, per doz. bunches ...	5 0-	6 0
Agrostis (Fairy Grass), per doz. bunches ...	2 0-	4 0
Asparagus plumosus, long trails, pr. ½doz.	1 6-	2 0
— medium, doz. bunches ...	12 0-	18 0
— Sprengeri ...	10 0-	12 0
Berberis, natural, per doz. bnchs.	3 0-	4 6
Carnation foliage, doz. bunches...	3 0	—
Croton foliage, various, dz. bnchs.	12 0-	15 0
Cycas leaves, artificial, per doz.	3 0-	12 0
Eulalia japonica, per bunch ...	1 0-	1 6
Moss, gross bunches	6 0	—
Myrtle, doz. bnchs. (English), small-leaved ...	6 0	—
— French... ...	1 0	—
Smilax, per bunch of 6 trails ...	1 6-	1 9

Plants in Pots, &c.: Average Wholesale Prices.

	s.d.	s.d.
Aralia Sieboldii, dozen	6 0-	7 0
Araucaria excelsa, per dozen ..	18 0-	21 0
Asparagus plumosus nanus, per dozen ...	10 0-	12 0
— Sprengeri ...	8 0-	9 0
Aspidistra, p. dz., green	21 0-	30 0
— variegated ...	30 0-	60 0
Boronea megastigma	15 0-	18 0
heterophylla ...	15 0-	18 0
Cinerarias, p. doz.	8 0-	9 0
Cocos Weddeliana, per dozen, 60's	6 0-	12 0
— larger, each ...	2 6-	10 6
Croton, per dozen	18 0-	30 0
Cyperus alternifolius, p. doz.	5 0-	6 0
— laxus, per doz.	4 0-	5 0
Dracæna, green per dozen ...	10 0-	12 0
Ferns, in thumbs, per 100... ...	8 0-	12 0
— in small and large 60's ...	12 0-	20 0
in 48's, per doz.	6 0-	—
Ferns:		
— choicer sorts, per doz. ...	8 0-	12 0
— in 32's per doz.	10 0-	18 0
Ficus elastica, per dozen	9 0-	12 0
Geonoma gracilis, 60's per dozen	6 0-	8 0
— larger, each ...	2 6-	7 6
Heliotrope... ...	7 0-	8 0

Plants in Pots, &c.: Average Wholesale Prices (cont.)

	s.d.	s.d.
Hydrangeas, white	12 0-	18 0
— pink	9 0-	15 0
— blue	18 0-	30 0
Kentia Belmoreana, per dozen	5 0-	42 0
— Fosteriana, 60's, per dozen	4 0-	6 0
— — larger, per dozen... ..	18 0-	63 0
Latania borbonica, per dozen ...	12 0-	30 0
Lilium lancifolium rubrum per dz.	18 0-	21 0
Lilium lancifolium alba, dozen ...	18 0-	21 0
Lilium longiflorum per dozen ..	18 0-	30 0
Lily of the Valley	18 0-	21 0
— 48's per. doz....	21 0-	30 0
Marguerites, in 48's per doz., white	8 0-	10 0
Mignonette ...	7 0-	8 0
Pandanus Veitchii, per dozen ...	36 0-	48 0
Pelargonium ..	10 0-	12 0
Pelargonium (Geranium), double scarlet, 48's ...	4 0-	5 0
— other varieties	5 0-	6 0
Phœnix rupicola, each	2 6-	21 0
Rambler Roses, each	6 0-	15 0
Spiræa japonica, per dozen pots	6 0-	8 0
— pink	10 0-	12 0
Stocks, all colours	8 0-	10 0

Fruit: Average Wholesale Prices.

	s.d.	s.d.
Apples, French Russets, box ...	10 6-	11 6
— Canadian, brls.	16 0-	25 0
— Wenatchee, p. case	7 6-	10 6
— American, brls.	26 0-	36 0
— American Newtown Pippin, barrel	36 6	—
— Californian Newtown Pippin, per case ...	7 0-	8 6
— Nova Scotian, per barrel ...	15 0-	16 0
— Oregon, Newtown Pippin, per case ...	9 6-	10 6
— Australian and Tasmanian		
— Australian case	6 0-	10 0
— Cox's Orange Pippin, cases...	16 0-	18 0
Bananas, bunch:		
— Doubles ...	8 6-	11 0
— No. 1	7 0-	8 0
— Extra	9 0-	10 0
— Giant	12 0-	14 0
— Loose, p. doz.	0 6-	1 6
— Red coloured...	4 6-	5 6
— Jamaica, pr ton	£9-	£12
— Jamaica Ordinary, per box (9 doz.)... ...	5 0-	5 6
Dates, per dozen ...	2 9-	3 0
— Egyptian, cwt.	25 0	—
Cranberries, p. case	9 0	9 6
Green Figs ...	4 0-	12 0
Grape Fruit, case:		
— 96's		
— 80's	8 0-	20 0
— 64's		
— 54's		
— per dozen ...	4 0-	6 0
Grapes:		
— Australian, per case	26 0-	
— English:— Canon Hall Muscat... ...	4 0-	8 0
— Muscat of Alexandria ...	3 0-	8 0
— English, per lb.	2 6-	5 0
Grapes, *continued*—		
— Belgian, per lb.	1 6-	2 6
— Cape, White, box	6 0-	10 0
Limes, per case ...	5 0-	6 0
Lemons, Messina, per case ...	9 6-	24 0
Palermo, box	10 0-	—
Lychees, 1 lb. box	1 6	—
Mangoes, Cape, dz.	6 0-	8 0
Melons English, each	1 0-	4 0
Nectarines, doz. ...	12 0-	24 0
Nuts, Almonds, bag	52 6-	—
— Brazils, cwt. ...	54 0-	62 0
— Spanish, sack	40 0-	42 6
— Barcelona, bag	35 6-	36 0
— Cocoanuts, 100	18 0-	23 0
— English Cobs, per lb.	0 3-	0 4
— Chestnuts, bg.	14 0-	26 0
— Walnuts, French, p. cwt.		
— Naples, p. cwt.	64 0	—
Oranges:		
— Tangerines ... (9's.) box	6 6	—
— Seville, sours, case	18 0-	20 0
— Messina, bitters, case ...	8 0-	9 6
— Jaffa, per case	8 6-	9 0
— Murcia... ...	10 0-	11 6
— Denia, per case	14 6-	34 6
— Palermo Blood	6 0-	7 0
Peaches, English, dozen	9 0	30 0
— Belgian, dozen	8 0-	12 0
Pears:		
— Cape, box ...	5 0-	6 0
— Tasmanian, case	10 0-	12 0
— per bundle of 3 boxes... ...	15 0-	20 0
Pineapples, St. Michael ...	2 0-	4 0
Plums, Cape, box	4 0-	7 0
Rhubarb, doz. bndl.	1 6-	2 0
— Natural, tally	8 0-	10 0
Strawberries, p. lb.	2 0-	4 0
— Second quality	1 3-	1 9

Vegetables: Average Wholesale Prices.

	s.d.	s.d.
Asparagus, Giant, per bundle ...	6 0-	7 0
— English, per bundle... ...	2 6-	4 6
— Small bundles	0 5-	0 6
— Paris green	2 3-	2 6
— Sprue, bundle	0 5-	0 6
— Lauris	1 0-	1 2
— Cavaillon ...	0 9-	10
— Victoria ...	3 0-	3 6
— Toulouse ...	1 9-	2 0
— Dijon ...	1 0-	1 6
Artichokes (Globe), per dozen ...	2 0-	—
— ground, ½ bus.	1 6	—
Batavia, per doz....	2 0-	—
Beans:		
— Guernsey, lb.	10-	1 3
— English, per lb.	10-	1 3
— French, brd. pad	6	—
Beetroot, p. bshl.	1 0-	2 0
— bags	3 0-	3 6
Broccoli, bushel	1 0-	1 6
— bags	1 9-	2 0
— Heads, p. dozen	1 6-	2 0
Cabbages, p. tally	4 0-	—
— per doz. ...	1 0-	1 6
Carrots (English) pr. doz. bun....	6 0-	8 0
— French, dozen		
— Round	6 0-	8 0
— Long ...	6 0-	8 0
— per pad ...	3 0-	3 6
— unwashed, per bag ...	2 0-	2 6
— washed, bag ...	3 0-	—
Cauliflowers, per tally	10 0-	15 0
— per dozen ..	1 6-	2 0
Celeriac:		
— French, p. doz.	4 0-	4 6
Chicory, per lb. ...	0 2-	0 4
Cucumbers, per dozen	2 6-	4 6
Endive, per dozen	1 6-	2 0
— French, p. doz.	2 0-	2 6
Greens, per bushel	1 0-	1 6
— bags	2 0	—
Garlic ... strike	2 6	—
Horseradish, 12 bundles ...	10 0-	12 0
Leeks, per doz. ...	2 0-	2 6
Lettuce, French, Cos, per dozen	6 0-	7 0
— English, Cos, per doz. ...	6 0-	7 0
Lettuce, English round, p. doz.	1 3-	1 4
— Dutch, p. crate	3 6-	4 0
Mint, per dozen bunches ...	3 0-	5 0
Mushrooms, cultivated, per lb.	0 10-	1 3
— Broilers ...	0 8-	10
Mustard and Cress, per doz. punnets	0 10-	1 0
Onions (English), per bag ...	4 0-	4 6
— per bushel ...	1 6-	2 0
— picklers, per ½ bushel ...	2 6-	3 0
— (spring), per doz. bunches...	1 6-	2 0
— (Spanish), case	6 0-	7 0
— Dutch, bags ...	3 6-	—
— Egyptian, bags	5 0-	5 6
— — cases ...	7 6	—
Peas, English p. lb.	0 10-	1 3
— French, pad of 10 lb. ...	6 0-	7 0
— Guernsey, p. lb.	10-	1 3

Vegetables: Average Wholesale Prices (cont.)

	s.d.	s.d.
Parsley, per doz. bunches ...	3 0-	4 0
Parsnips, per bag	2 0-	2 6
— per bushel ...	1 6-	—
Radishes (French), per dozen ...	1 6-	2 0
— English, p. doz.	10-	1 3
— Guernsey ...	0 9-	1 0
Sage, per dozen ...	2 0	—
Seakale, punnets ..	1 0-	1 2
— outdoor, box, 12 lbs.	2 0	2 6
Spinach, p. bushel	2 0-	2 9
ScotchKale,bushl.	1 0-	1 3

	s.d.	s.d.
Tomatos, English, per lb.	0 9-	1 0
— Guernsey p. lb.	0 8-	1 0
— Canary, p. bdl.	12 0-	16 0
Thyme, per dozen bunches ...	1 6-	2 0
Turnips (English), per dozen bunches ...	6 0-	7 6
— bags	3 0	—
French, long, dozen	8 0-	9 0
round, dozen ..	5 0-	6 0
— unwashed, bag	2 0-	2 6
Watercress: — dozen	0 5-	0 6

REMARKS.—The trade in Apples and Pears is principally in Australian and Tasmanian Fruits. The s.s. Orestes arrived with about 12,000 cases. The Pears included such well-known varieties as Beurré Clairgeau, Joséphine de Malines, Glout Morceau and Wakefield. About 5,000 cases of Fruit have arrived during the past week from Cape Colony. The shipment included Black, White and Red Grapes, and Pears, mainly of the varieties Winter Nelis and Beurré Bosc. Grapes from home growers, the Channel Islands and Belgium, are an increasing supply. English and Belgian-grown Peaches are available in larger numbers, and may be expected to be more numerous each succeeding week. There are fairly good supplies of Melons and Green Figs, including consignments from the Channel Islands. Forced Strawberries are available daily in much larger quantities. Continental Cherries are just arriving, also a few Strawberries in handle baskets. The supplies of English and Channel Island Tomatos are increasing, but those from Teneriffe are shortening. Supplies of Continental Asparagus have increased considerably. English Asparagus is arriving in plenty, and the supplies of this vegetable have been rather in excess of the demand. There is also a much larger supply of other forced vegetables, especially Beans, Peas and Mushrooms. There is still an abundance of all kinds of the commoner vegetables.—*Edgar H. Rides, Covent Garden, May 7, 1913.*

Potatos.

	s.d.	s.d.
Blackland, per cwt.	3 9-	4 0
Evergood ,,	3 9-	4 3
King Edward ,,	4 6-	5 0
Dutch, per bag ...	3 0-	3 9

	s.d.	s.d.
Belgian, per bag	3 6-	4 6
German ,,	3 3-	4 6
Dunbar ,,	5 6	6 6
Jerseys, per cwt.	23 0	—
Scotch (grey soil) ,,	4 0-	5 0

REMARKS.—Trade in old potatos is very steady and prices are a little easier. There are a few Jersey new Potatos on sale; in a fortnight we may expect a good supply from both Jersey and St. Malo.—*Edward J. Newborn, Covent Garden and St. Pancras, May 8, 1913.*

Obituary.

Franz Ludwig Späth.—In the issue for April 19 we referred briefly to the death of this well-known German nurseryman at Baumschulenweg, Berlin. He was the head of a very old Berlin family, nearly all of whom were gardeners. In the year 1720, Christopher Späth founded at the "Halleschen Tor" (now Johannistisch) a small nursery, which on his death passed to his son, Carl Friedrich (1746-1782), who removed the business to No. 154, Köpernickerstrasse. He in turn was succeeded by his son, another Carl Friedrich, who died in 1831. From this date until 1863 the business was in the hands of Ludwig Späth, the great-grandson of the founder. Franz Ludwig Späth was born on February 25, 1839, in Berlin. After leaving the Realgymnasium at Luisenstadt, and the Köllnische Gymnasium, he studied botany, natural science, chemistry, and philosophy at the University of Berlin. In 1864—at the early age of twenty-five—he took over the management of the nursery, which was at that time scarcely twenty acres in extent. It was soon found that the premises in Köpernickerstrasse were incapable of adequate extension, and in the early sventies Späth removed the nursery to the Britzer Feldmark, between the village of Britz and Baumschulenweg, a suburb of Treptow. The new nursery at Neu-Falkenrehde, near Potsdam, is also connected with the Britzer Feldmark, and the whole area comprises nearly two thousand acres. Späth was one of the founders, and for many years the president, of the Deutscher Pomologen Verein, of which society the chief object is the promotion of fruit-culture in Germany. He was also the first chairman of the "Berlin Garden-lovers' Society," now the German Horticultural Society." For the benefit of his many hundreds of employees, Herr Späth founded, on his seventieth birthday, a pension fund, with the sum of 100,000 marks. He also built and endowed at his own cost a large Kindergarten in Baumschulenweg. Mr. Späth leaves six daughters and a son, Dr. Hellmut Ludwig Späth, who will continue the business.

Archibald Robbie.—The *American Florist* records the death of Mr. Archibald Robbie, gardener to Mrs. Helen Gould Shephard, at Lyndhurst, at the age of 45. Mr. Robbie was born in Aberdeenshire, Scotland, but he had resided in the United States for several years.

W. T. Hindmarsh.—We regret to record the death of Mr. W. T. Hindmarsh, which occurred on the 27th ult. Mr. Hindmarsh, who was a solicitor at Alnwick, was especially interested in Alpines, and he was the first to flower Shortia uniflora in this country. His rock-garden at Alnwick contained numerous rare and choice plants which he obtained from Switzerland, Japan, and other parts.

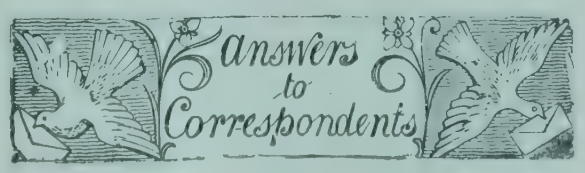
ENQUIRIES AND REPLIES.

Origin of Lord Grosvenor and Other Apples.—Can any reader inform me if they know anything of the origin of May Queen, Lord Grosvenor, and Golden Spire Apples? There



THE LATE FRANZ LUDWIG SPÄTH.

is no record that I can trace in the usual sources. *Edward A. Bunyard, Royal Nurseries, Maidstone.*



Chrysanthemums and Carnations: *Mum.* Single Chrysanthemums, which are now in 60-sized pots, should be transferred at once into 4½-inch pots. When well rooted in these latter receptacles they should be shifted into 8½-inch or 9½-inch pots, according to the size of the plants you require; the latter receptacles are preferable. The plants may be grown without stopping; then, if they are kept hardy, they will make firm, bushy plants, producing large quantities of bloom on long stems. If desired, they may be stopped once or twice up to the middle of June, potting them into their flowering pots as soon as they break after the second stopping. Cultivate the plants in the open from now onwards. Seedlings of Perpetual-flowering Carnations in small 60-sized pots should be shifted into 4-inch or 4½-inch pots as soon as they are sufficiently rooted. Some time in June they should be shifted into 6-inch pots. Stand the plants on a cool bottom during the summer, when lights should be placed over them during times of heavy rains, housing them early in September. Allow them to grow quite naturally without any stopping, and they will probably flower between October and Christmas, or some of them may not bloom before the spring. As seedlings often grow quicker and make more roots than plants propagated from cuttings, the former require a fair quantity of manure after they become well rooted in the 6-inch pots. But seedlings will not flower so continuously through the winter, and will probably be benefited by another shift in February, for this will greatly benefit the second crop of flowers, which should appear in April or May next.

Chrysanthemum Ladysmith: *G. H. H. W.* We have no knowledge of a white sport from "Ladysmith" being offered for sale. This variety varies very much in colour in different localities; in some places the blooms are almost white, whilst in others they are a shade of magenta.

Correction: The plant of Odontioda Bradshawiæ, exhibited by Sir Jeremiah Colman, Bart., at the New York International Exhibition, carried 40 blooms, not 740, as a printer's error made it appear in the last issue.

Formaldehyde as a Cure for Mildew: *J. D. P.* The addition of soft soap would not at all affect the efficiency of formalin as a specific for mildew. The weak point is its rapid volatilisation; hence it only kills mildew present at the moment of application, and the spraying requires to be repeated frequently to effect a cure.

Flower Beds and Colour Scheme. *Thirty Years' Subscriber.* Either of the following three alternative schemes may be selected for furnishing the flower beds, of which your small plan is reproduced. But the surroundings must be taken into consideration, and of these we have no knowledge. The colour of the house, for example, might make all the difference. The suggested schemes may prove too simple, but they are purposely simple, to be in keeping with the size of the beds. The scheme (a) should be good all the season. (a) 1 and 2, Antirrhinums of orange and terra-cotta shades; 3 and 4, Perilla nankinensis, or other dark foliage, and crimson Antirrhinums; 5 and 6, Antirrhinums of orange and terra-cotta shades; 7, yellow Antirrhinums; 8 and 9, pink Antirrhinums; 10, white Antirrhinums; 11 and 12, orange and terra-cotta Antirrhinums; 13 and 14, Perilla nankinensis or crimson Antirrhinums; 15 and 16, Antirrhinums of orange and terra-cotta shades. The Antirrhinums should be of the intermediate type, about 18 inches high. The above arrangement is simple, with no edgings, as they are in doubtful taste, and the beds are small for edgings. The colours could, of course, be arranged differently. For instance: Crimson shades might take the place of the orange and terra-cotta varieties. In such a case the Perilla should be replaced by a grey foliaged plant, such as Centaurea candidissima. One great advantage of the above plan is the fact that all the plants can easily be purchased ready for planting this season. (b) 1 and 2, Pelargonium Paul Crampel; 3 and 4, Centaurea candidissima; 5 and 6, Pelargonium Paul Crampel; 7, Snowdrop or some other white flowered variety; 8 and 9, King of Denmark (salmon); 10, Calceolaria amplexicaulis; 11 and 12, Pelargonium Paul Crampel; 13 and 14, Centaurea candidissima; 15 and 16, Pelargonium Paul Crampel. (c) 1 and 2, Tuberous-rooted Begonias of scarlet or crimson shades; 3 and 4, Centaurea candidissima, or white Begonias; 5 and 6, Scarlet or crimson Begonias; 7, white Begonias; 8 and 9, Pink Begonias, with dot plants of some grey foliaged plant such as Leucophyta Brownii; 10, Yellow Begonias; 11 and 12, Scarlet or crimson Begonias; 13 and 14, Centaurea candidissima, or white Begonia; 15 and 16, Scarlet or crimson Begonias. In this plan the scarlet Begonias might be edged with white Alyssum, or the Begonias could be planted thinly and carpeted with the Alyssum.

Grubs near Sweet Peas: *H. E.* The insects you submitted to us are the larvæ of cater-

pillars of a noctuid moth. If they have not already attacked the plants in question it is highly improbable that they will do so now.

Mildew on Vines: *T. T.* If you apply sufficient sulphur to the vines with the syringe it will kill the mildew when the sun raises the temperature. The marks of the mildew will remain, and probably also the marks of the sulphur if the berries have not reached the stoning stage at the time of the application. There is no better way of curing mildew than the old-fashioned one of placing sulphur on the pipes, but this should not be done till a month after flowering commences. The house should be kept close and contain enough piping to raise the temperature to 80° at night. Make the pipes very hot, and paint them with a thick coating of sulphur, and also dredge more dry sulphur on the top of the flow-pipe, while it is still wet with the painting. The ventilators should remain open at the top till the operation is completed, and the atmosphere kept comparatively dry. Then close the ventilators and so manage the fire that the temperature will keep up to 80° for three or four hours. This will effectually kill all mildew as well as red-spider, but it will not kill the eggs of the latter pest. Campbell's Sulphur Vaporiser, used according to the directions given with the machine, will answer the same purpose, and may be used where there is not sufficient piping to produce the requisite heat. It leaves an objectionable coating of dust on the berries, which may be removed by a thorough drenching of clear, soft water on the following day, but it cannot be removed if allowed to remain till watery vapour has condensed on the surfaces, which will happen if the temperature is allowed to become low. This apparatus is very effectual if used in autumn after the fruit is gathered. So also is a heavy application of sulphur from the syringe, or used dry from the Malbec bellows; but in the latter cases the sulphur must be applied while the sun is sufficiently powerful to raise the temperature to 80°, say, not later than the end of August. Sulphur will not readily mix with water, but if first formed into a paste with a little soapy water there is no difficulty. After pruning, a mixture of sulphur and soft soap (half a pound of soap to a gallon of water) may be applied with a brush. The soap will act immediately, and the sulphur will emit vapour in the following spring when it becomes sufficiently heated. There must be no stripping of the bark, or the soap will injure the inner bark, and there must be no syringing of the stem to wash off the sulphur.

Names of Fruits: *C. B.* 1, Newton Wonder. 2, Augustus Pearmain. 3, The specimen was decayed. Send fruits earlier in the season next year.

Names of Plants: *C. S. and Co.* Epimedium pinnatum.—*Ferns.* 1, Blechnum brasiliense, fertile frond; 2, Pteris cretica; 3, P. argyræa; 4, P. serrulata; 5, Nephrolepis rufescens; 6, Davallia Mooreana; 7, Nephrolepis tuberosa; 8, Pteris cretica albo-lineata; 9, Adiantum hispidulum; 10, A. Capillus-veneris; 11, Blechnum brasiliense, barren frond; 12, Adiantum O'Brienianum; 13, Pteris Wimsettii; 14, Nephrolepis todæoides Rochfordii; 15, N. todæoides; 16, Adiantum Waltonii; 17, A. decorum; 18 and 19, Nephrolepis davallioides and crested form; 20, N. exaltata; 21, Adiantum cuneatum; 22 and 23, Adiantum formosum; 24, Nephrodium molle; 25, Fittonia Verschaffeltii argyroneura; 26, F. Pearcei; 27, Selaginella denticulata; 28, Cyperus longus; 29, C. laxus; 30, Dendrobium moschatum; 31, Cyrtomium falcatum; 32, Myrtus microphyllus; 33, Polypodium aureum; 34, Kerria japonica; 35, Papaver bracteatum; 36, Berberis stenophylla; 37, send when in flower; 38, Chamærops excelsa. You have failed to observe our directions; on another occasion please send six specimens only at one time. —*Leigh.* 1, Karatas fulgens, sometimes called Guzmannia picta in gardens; 2, Encomis punctata; 3, Sparmannia africana.—*H. A. S.* Dendrobium Dalhousieanum and Oncidium altissimum.—*X. Y.* 1, Pleurothallis lateritea; 2, Octomeria diaphana; 3, Oncidium barbatum; 4, Odontoglossum Lindleyanum; 5, Bifrenaria tetragona.—*Kirby.* 1, Terminalia elegans; 2, Trachelospermum jasminoides; 3, Phyllanthus nivosus.—*Orchid.* Odontoglossum læve, sometimes called Miltonia Karwinskii in gardens.—*J. S. Bradford.* Bifrenaria Harrisoniæ.—*T. T.* 1, Selaginella viticulosa; 2, Selaginella denticulata; 3, Selaginella cæsia.

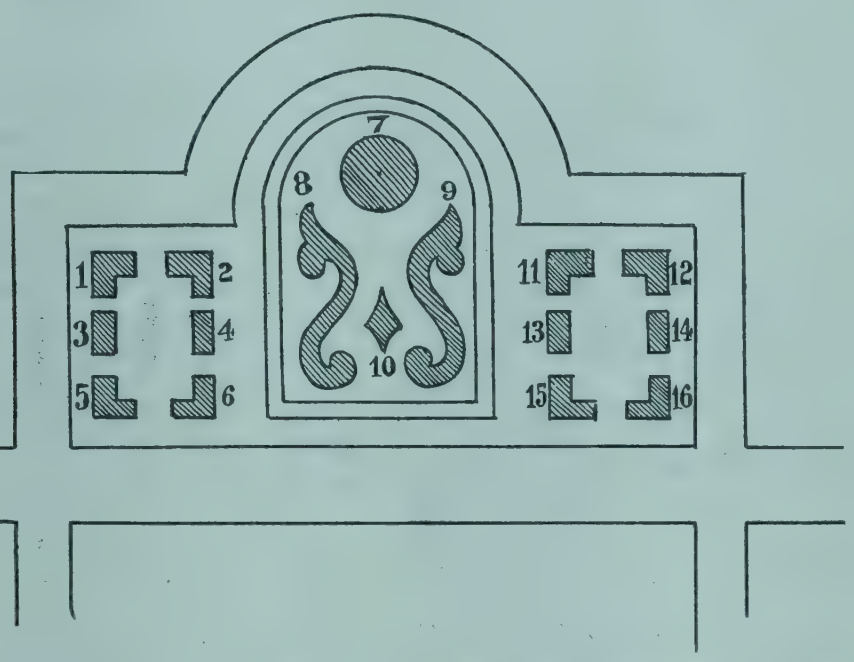


Fig. 134.—Plan of flower beds for planting with different colours.

(See page 319.)

Peach Trees: *J. S.* Your own experience is decidedly against planting and training Peach trees crosswise at short intervals in a lean-to house, seeing that you obtained good crops of fruit previously from trees trained to curved trellises with, we presume, standard fan-trained trees growing against the back wall. The best results with Peaches under glass in a lean-to or ¾ span house facing south is to be obtained from trees trained to a trellis fixed within one foot of the roof-glass the entire length of the rafters. Trees thus trained have ample room to develop, and will yield satisfactory crops with ordinary care and cultural skill. The wood of trees planted and trained "stall" fashion seldom becomes properly ripened.

Pollinating Fruit Trees: *J. E. C.* Although you may have noticed but few bees in your garden it does not necessarily follow that you may expect no fruits to develop. Other agencies, such as the wind, will disperse the pollen, and some of the latter is certain to find its way to the stigmas. There are also numerous flies and other insects besides bees which transfer the pollen. The best time to use the brush you mention is at noon, as the conditions are then usually warmer and drier than at any other time of the day.

Tuberoses: *R. N. N.* Pot the plants at intervals of a fortnight up to the middle or end of May, so as to ensure a supply of flowers from May to the end of November. In potting rub all the bulblets off the sides of the tubers, and employ the best loamy soil at command. Place one tuber in each 3-inch pot, which should be plunged to the rim in a hotbed, or in a box filled with sawdust, and placed anywhere in heat near to the roof-glass. Keep the soil moderately dry until growth begins, when it should be kept uniformly moist. Suckers should be persistently rubbed off as they appear, to throw strength into the central shoot, and thereby promote the production of good spikes of flowers. When the latter are about 8 inches high, shift the plants into 4½ and 6-inch pots. Maintain a close and moist atmosphere until the flowers begin to open, syringing the leaves to keep red-spider from attacking them. When the pots are full of roots, applications of weak liquid manure, or top-dressings of a good plant-food, immediately before applying clear water at the roots, will tend to the production of large spikes of well-developed flowers.

Vines: *D. C.* The insects are the Vine Weevils (see Fig. 135). Place freshly-tarred paper under the vines, then approach the vines with a lantern in the hand, giving each rod a slight shaking. Directly this is felt, the beetles, being alarmed, will drop from the vines on to the tar. It is difficult to kill the larvæ in the soil, for they seem proof against any but the strongest and most dangerous applications; but if the surface soil could be removed, many of the grubs could be thus taken away. During the day they are hidden away in the cracks of the wall, or under clods of earth, boards or other refuge, and as they have to get from these hiding places to the plants by foot (for they are wingless) you may possibly be able to place something that will prevent them from doing so.



Fig. 135.—Clay-coloured and black vine weevils and their grubs.
(The lines indicate the natural size.)

Vines and Paraffin: *F. W. S.* There is no doubt that your vines are suffering from the effects of the dressing of neat paraffin oil.

Vine Leaves for Examination: *H. T.* The leaves reached us in a dry, shrivelled condition. Send fresh material packed with moss or damp blotting paper in a tin box.—*Foreman.* In the absence of details as to culture and also whether such a condition has happened in previous years, and whether all the vines in the house are similarly affected, we can only surmise that the atmospheric conditions have been faulty. We have known like results occur from ammonia fumes, as when strong manure water has been sprinkled over hot pipes, or placed in evaporating pans on those pipes—also when rank manure has been used for an inside mulching. In one case Richardias standing on a hard, uneven surface under vines had manure water applied to them—some of which ran through the pots and collected in pools—and although the Richardias were unharmed, the vines immediately above those plants lost nearly all their leaves from the effects of the manure water being volatilised by sun-heat. Fresh lime sprinkled on manure in the house would act in the same way as would fresh lime mixed with soot.

Communications Received.—A. S.—W. B. H.—A. P.—R. E. A.—W. F.—J. M. L.—J. T. D.—H. W.—J. D.—W. J.—W. P.—J. B. (Bicester).—Constant Reader.—J. H. L.—R. D. G.—H. J. C.—P. H. R.—H. N.—H. J. B. (Bristol).—R. A.—A. S. (Garelochead).—H. M.—J. M. (Ireland).—Ficus (Glos.).—T. D.—A. E. G.—C. S.—F. W.—F. H. B. B.—J. F.—W. G.—L. L.—M. and P.

THE
Gardeners' Chronicle
No. 1,377.—SATURDAY, May 17, 1913.

CONTENTS.

Adiantum pedatum in America ... 332
Apple Present van Engeland ... 325
Azaleas, Indian ... 324
Batata, or Sweet Potato 332
Clematis Armandii ... 322
Daffodils, two new ... 330
Davidia involucrata ... 332
Edinburgh Botanic Garden, notes from the ... 329
Florists' flowers—
Violas ... 325
Foreign correspondence—
Among the Hills ... 331
Ferns at the Ghent Show ... 331
Fruit blossom ... 332
Ireland, notes from ... 325
Iris hunt, a Dalmatian 321
Market fruit garden, the ... 332
Obituary—
Kay, Charles ... 336
M'Leod, Norman ... 336
Orchid notes and gleanings—
Odontioda Venus ... 323
Oxlip Primrose, fasciation in ... 323
Phytophthora infestans, the sexual spores of... 328
Plant diseases, the international aspect of 330
Plants, the digestive juices of ... 328
Plants, new or noteworthy—
Hernandia cordigera 322
Polygonum polystachyum at Straffan House Gardens ... 329
Rhodochiton volubile. 332
Rhododendron pallidum 332
Rosary, the—
French research on fungous diseases ... 323
Royal Academy, the ... 330
Seed-testing station in Ireland ... 330
Societies—
British Gardeners' ... 334
Linnean ... 335
National Auricula and Primula ... 334
Perpetual-flowering Carnation ... 330
Royal ... 329
Royal Horticultural 329 & 332
Scottish Horticultural ... 335
Shropshire Horticultural ... 335
Soil, steam-sterilised, the chemistry of ... 329
Town smoke and plant growth ... 329
Trees and shrubs—
North American Libocedrus ... 325
Week's work, the—
Apiary, the ... 327
Fruits under glass ... 326
Hardy fruit garden, the ... 326
Kitchen garden, the ... 327
Orchid houses, the ... 327
Plants under glass ... 326

ILLUSTRATIONS.

Apple Present van Engeland ... 325
Clematis Armandii ... 322
Ferns, an exhibit of, at the Ghent Exhibition ... 331
Narcissi St. Olaf and Evangeline ... 329 & 330
Oxlip, a fasciated ... 323
Polygonum polystachyum in Straffan House Gardens, Co. Kildare (Supplementary Illustration)

A DALMATIAN IRIS HUNT.

THE possibility of obtaining some light on the difficult problem of the various forms and varieties of Iris pallida led me recently to undertake a journey down the Dalmatian coast, in spite of the warnings of various friends that war scares and mobilisation in Austrian territory might make travelling disagreeable. The term Dalmatian is convenient rather than correct, for my wanderings have not been confined to the province of Dalmatia, but have extended from Trieste and Fiume to Ragusa, and inland as far as Jablanica, on the road from Mostar, in Herzegovina, to Sarajevo, in Bosnia.

After a warm spring day at Trieste in the middle of April, it was disappointing to have a rough passage in the teeth of a violent sirocco to Gravosa, the port of Ragusa, and to arrive there in cold, wet weather. However, I set out at once to search the hills behind Ragusa and Gravosa, for I had heard reports of a pale lavender Iris on the rocks above Ragusa, and wondered whether I should find the fine plant that we know as I. pallida dalmatica. As it happened, I did not go direct up the hill behind the town, but walked round the base to the north-east side of the ridge, where I could find nothing but Tulipa sylvestris, various Orchids and a dark-striped Fritillaria which I did not recognise. The nearest approach to an Iris was Hermodactylus tuberosus, which is sometimes known as Iris tuberosa. The flowers were over, but the curious, drooping seed vessels and the characteristic foliage were easily recognisable.

Having crossed the ridge to the slopes behind Gravosa, I came into the neighbourhood of vineyards, and soon found several clumps of an Iris pallida which, to my surprise, was neither the supposed type nor the variety dalmatica, but closely resembled the forms which I have received from the neighbourhood of Riva and Roveredo, and also those produced by crossing the type with I. Cengialtii.

The fact that Irises only occurred on the slopes above the town led me to think that they might have escaped from cultivation, and I determined to explore further the next day. I therefore started out along the slopes above the town towards the south, and finally climbed over the ridge to the east. Once more it appeared that Irises only occurred on the western side near cultivated areas, and after several hours of wandering on the other side, it seemed that after all no large Irises could be considered certainly wild in the neighbourhood of Ragusa.

One of the peculiarities of the limestone formation of this region is the way in which streams appear and disappear again below the surface. Of this phenomenon there is a good example in the Ombla, near which I then found myself. I therefore went down into the valley and across to the point where the river issues in two or three streams at the base of a cliff which towers almost perpendicularly to the height of some eleven hundred feet. The river, as it issues from the rocks, forms a stream at least sixty feet wide. On the rocks just above one of the mouths I saw an Iris, and on looking up the cliffs was amazed to see purple patches on every ledge. The rest of the afternoon I spent in climbing about on the cliffs, uprooting a plant here and there, taking, as far as I could, those that illustrated the range of colour from pale to deep red- and blue-purple. It was astonishing to see the range of colour in what must, I think, be undoubtedly a wild habitat. All the time I was on the look-out for an albino plant, for I have always suspected that this must exist to account for various garden forms grouped under the name of plicata. My expectation was not disappointed, for I found one clump of such an albino, which closely resembled—if, indeed, it was not identical with—the plant grown in gardens as Innocenza. Some plants were almost, if not quite, as pink as Queen of May and some had yellow and some white beards. The foliage was comparatively narrow and dwarf, and it was certainly disconcerting to find nothing in the least resembling the type.

The fact that this cliff, facing south-west, was covered with what must be wild plants makes it quite possible that the parallel ridge, on which Ragusa lies, may likewise have been an original home of this form of Iris pallida, or it may be that the plants now found in the neighbourhood of Ragusa and Gravosa are descendants of some that came originally from the cliffs that tower above the source of the Ombla. It is perhaps worth recording that the white Iris cultivated in this district is I. albicans. I saw no white forms of I. germanica here.

On the next day I took the train from Gravosa and went inland to Mostar, which is still essentially a Turkish town. My object was to get up on to the Velez Planina, the highest ridge (between 5 and 6,000 feet) in the neighbourhood, for on this mountain I knew, from herbarium specimens, that I. Reichenbachii has been found. As the whole country was mobilised and all the forts on the hills full of troops, it seemed advisable to report myself. An interview with the general in command of the fortifications supplied me with leave to botanise in the surrounding country, on condition that I did not sketch or photograph, and that I would stand still and flourish my document if challenged by a guard. Armed with this document, I set out accordingly the next morning hoping to find I. Reichenbachii, but was greatly disappointed to see, after climbing the lower ridges which hide the summit from the town of Mostar, that everything above 3,000 feet was deep in snow. I persevered as far as I could, but rough limestone, when the strata emerge edgewise and the interstices are full of snow, is difficult to traverse, and I therefore returned empty-handed after some ten hours of very hard walking and climbing.

The papers were full of reports of phenomenal snowfall in Bosnia, so that a visit to Sarajevo was out of the question; but I tramped some twenty miles up the wild and desolate gorge of the Narenta without seeing an Iris on the lower levels, and the snow made it quite impossible to reach the higher levels at which alone Irises appear to occur in this district. The rocky gorge through which the Narenta flows between Jablanica and Dreznica is very wild and lonely. Among the rocks there grows everywhere a Cytisus which looks like a Laburnum with erect, instead of pendant, racemes of yellow flowers. From time to time I encountered flocks of goats and lean sheep browsing on the Cytisus and the scanty vegetation, and tended by peasant women, who were also busy spinning wool into the coarse yarn of which their garments are woven.

Another plant which forms a conspicuous feature of this district is a large bright yellow-flowered Euphorbia, possibly E. Wulfenii, while on the higher levels I crossed wide stony stretches on which a minute, shrubby species of this same genus formed almost the only vegetation. Where the valley becomes broader near Jablanica, I noticed in meadows the foliage of some large Colchicum growing abundantly.

From Mostar I went down to Metkovii, near the mouth of the Narenta, and, having to wait a few hours for the steamer to start, proceeded to investigate the town. In the garden of a military store I saw the finest plants of a white variety of I. germanica that I have ever seen. The leaves were fully three feet high and over two inches in width, and the plants were obviously an albino form of the somewhat reddish-purple form of I. germanica, which occurs here and there in cemeteries in Mostar and

in cultivated areas. One of the peculiar features of Mostar is the number of disused Turkish cemeteries, which lie scattered among the houses all over the town. All are grass-grown and neglected, while some are smothered with yellow Asphodel, and a few contain a plant or two of this form of I. germanica. I coveted a specimen and at last found a clump on a rubbish heap below the old Turkish bridge across the Narenta. As I climbed a railing and dropped down, a Turk rushed out from the bazaar and seemed to be greatly incensed at my having torn up a few Iris plants. I could not explain myself in Turkish, and neither German nor Italian seemed to appease him. However, a small coin or two enabled me to beat a retreat with the plants before a crowd had time to collect.

The white form at Metkovic was more easily obtained by the courtesy of an officer, who at once had a plant dug up for me, and I hope that this may prove to be one more of the numerous albino forms of I. germanica, of which I. florentina is the best known.

From Metkovic to Spalato takes nearly a whole day in a small steamer, but there was not sufficient time in any of the small ports at which we touched to find any local Irises. In Spalato I noticed in the public gardens that not I. pallida, but a form of I. germanica, is grown. In order to explore the hills that surround the town, I took a train up to Clissa and kept a sharp lookout from the back platform of the last carriage as we slowly puffed our way up for any signs of Irises. I saw nothing until we had nearly reached Clissa, and then, as we crossed a rocky gully, I thought I saw Iris leaves. The last part of the line winds in and out through tunnels, and I considered myself lucky when, on making my way down, I hit on the right spot and found the plants I had seen from the train. There were, unfortunately, no signs of flowers, but the foliage seemed to resemble that of I. pallida rather than that of I. germanica.

The southern face of the rock on which the old fort of Clissa stands is smothered with Iris germanica. Plants occur on ledges which are inaccessible without a rope, and it really looks as though the plants were here indigenous. As elsewhere, however, Iris germanica only occurs in the immediate neighbourhood of dwellings, and we must hesitate to say that these plants are certainly indigenous. On the other hand, the fact that I. germanica is almost without doubt a plant of the Mediterranean region and the inaccessibility of some of the ledges on which it occurs make it possible that these plants are not escapes from cultivation. The colour of the flower is a somewhat reddish purple.

From Clissa I toiled on over the rough rocky ground all round the top of the amphitheatre of hills which lie above Salona and Spalato, but found no traces of Irises except a few plants of the same form of germanica, and these always near cultivated ground. *W. R. Dykes.*

(To be continued.)

NEW OR NOTEWORTHY PLANTS.

HERNANDIA CORDIGERA, VIELL. (ARALIA TRILOBA, BULL).

ARALIA TRILOBA is an ornamental stove shrub of rather remarkable appearance, its leaves being unlike those of any other plant in cultivation. They are deep glossy green, rather large, often a foot or more in length, and deeply divided into three or more long, narrowly oblong, linear-oblong or linear-lanceolate, acute or obtuse lobes. It is perhaps not particularly common, and no attempt seems to have been previously made to identify it in this country. Recently, however, Sir Frank Crisp sent some leaves of it to me with the request that it should be identified.

Turning first to the account of its introduction, I found that it was a native of New Caledonia, but upon searching through all the Araliads from that island contained in the Kew Herbarium and finding nothing that at all resembled it, either in form or in its very peculiar venation, I suspected that it might belong to some other order of plants. Therefore, a leaf was sent to Dr. A. Guillaumin, of Paris, who has worked at and published a list of all known New Caledonian plants, and from the information and identification he has kindly communicated I am able to supply the following history of this interesting plant.

It appears to have been first introduced in 1865 or early in 1866 by Mr. William Bull, of Chelsea, who obtained the plant from Australia (probably from Sydney Botanic Garden), and exhibited it at the meeting of the Royal Horticultural Society on January 23, 1866, and subsequently distributed it under the name of Herrania palmata (see *Journal Royal Horticultural Society*, 1866, "Extracts from Proceedings," p. 1; and Hogg, *Gardeners' Year Book*, 1867, p. 40). A leaf bearing this name, received from France in 1898 and stated originally to have come from Sydney, is preserved in the Kew Herbarium. All the species of Herrania, however, are natives of tropical America, and quite unlike the plant now under consideration.

In 1896 Mr. Bull again introduced the plant, this time from New Caledonia, its native country. But apparently he did not remember or did not recognise that it was the same plant he had previously named Herrania palmata, for he exhibited it at the Royal Horticultural Society's meeting on September 8, 1896, under the name of Aralia triloba, but it appears not to have been distributed until about 1905.

In 1896 also a plant of Hernandia cordigera was introduced from New Caledonia into the Museum Garden at Paris. After being cultivated for some years, this plant developed leaves of a different form, and an account of the remarkable variation of its foliage will be found in the *Bulletin du Mus. National Hist. Nat., Paris*, 1911, p. 361, by Gérôme, who identified a plant exhibited by Chantrier under the name of Herrania palmata as being only a young condition of Hernandia cordigera. This was the first hint of any connection of Mr. Bull's plant with Hernandia. But it did not at that time appear to be known that Herrania palmata and Aralia triloba are also identical, for in the *Revue Horticole*, 1912, p. 493, Dr. Guillaumin places Aralia triloba as a synonym of Polyscias pinnata, but now, in his letter, he states that he made that identification from description only and after seeing the leaf of A. triloba sent to him from Kew finds he was quite wrong in supposing it to be the same as Polyscias pinnata and that Aralia triloba is identical with Herrania palmata and with juvenile stages of Hernandia cordigera.

In this way the synonymy of the plant has been cleared up, and we have Gérôme and Dr. Guillaumin to thank for doing it. For only by seeing such variation produced upon the same individual would any one have the slightest conception that leaves differing so greatly in size, form and venation could by any possibility belong to the same species.

According to the account given by Gérôme, it appears that the leaves vary as the plant develops more or less in the following manner. On young plants, and possibly also on young branches of older plants, the leaves are first 7-lobed, then 5-lobed, then 3-lobed; as the plant or branches approach the flowering stage the leaves become entire, and at first of an elongated ovate form and acute; these are finally succeeded by others that are elliptic and very obtuse or rounded at the apex. The entire leaves are very much shorter, and their venation entirely different from that of the lobed leaves.

It is common knowledge that the leaves of young plants of many Araliads and several other tropical plants are totally different from those of the adult or flowering stage of the same individual, and Hernandia cordigera is an interesting addition to those already known.

The names Aralia triloba and Herrania palmata must therefore give place to that of Hernandia cordigera, which belongs to the order Hernandiaceæ. *N. E. Brown.*



FIG. 136.—CLEMATIS ARMANDII: FLOWERS WHITE.

CLEMATIS ARMANDII.

THIS evergreen Clematis (see fig. 136) was introduced from Western China some three or four years since by Messrs. Jas. Veitch and Sons. It promises to make a good garden plant for clothing poles or pergolas or for training against walls in sheltered districts.

The flowers are pure white, and produced in dense clusters. They last in a fresh condition

for a considerable time. The petals are of a glistening white, usually six, occasionally seven on each flower, which is fully 2½ inches in diameter. The blooms are produced in threes on foot-stalks from 2 to 2½ inches long, and then united to the climbing stem by stalks an inch in length.

One of the striking characteristics of the plant is its thick, dark, evergreen, leathery leaves, which average 4 inches in length by 2 inches in width. The plant flowers early in April, and the blooms apparently are in no way injured by frosts. *Edwin Beckett, Aldenham House Gardens, Elstree.*

ORCHID NOTES AND GLEANINGS.

ODONTIODA VENUS.

Flowers of an elegant little hybrid obtained by crossing Odontoglossum ramosissimum and Cochlioda Noezliana, have been sent by Sir Jeremiah Colman, Bart., Gatton Park, Surrey (gr. Mr. Collier), to illustrate the variation in colour in the different stages of the flower. When mature the flowers are mauve, and, without evidence to the contrary, they would seem to indicate that the cross must have been with C. vulcanica, which is of a similar tint. But in the early stage the colour is deep red, plainly indicating the influence of C. Noezliana. It appears that the presence of purple in Odontoglossum ramosissimum gives a dominant factor suppressing the scarlet of Cochlioda Noezliana, which shows at first. The inflorescence bears many flowers with lanceolate segments, undulate at the margin, and in general form resembling Odontoglossum ramosissimum, especially in the prominent crest of the lip.

FASCIATION OF OXLIP PRIMROSE.

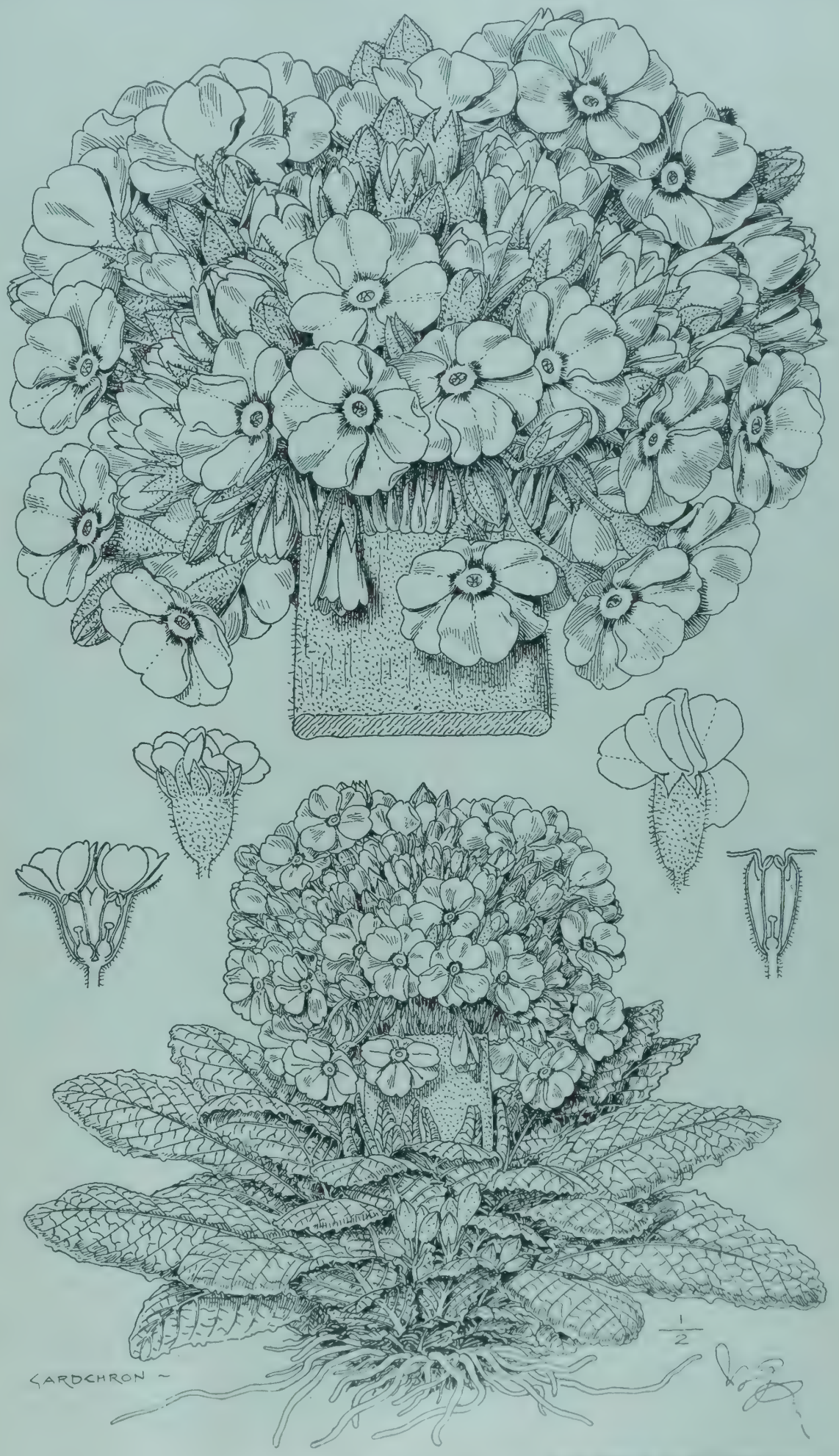
The example of fasciation illustrated in fig. 137 is remarkable for the fact that the whole inflorescence is involved : the flowers being borne on a flat board-like peduncle. The cause of fasciation is unknown, but there is good ground for regarding the phenomenon as due to some disturbance at the growing point of the plant. As a result of this disturbance the rudiments of the several flowers fail to separate from one another. Thus, instead of a series of separate members being formed, an association or complex of members is produced. Hence the massiveness of the peduncle. Even when the time comes for the production of the rudiments of the flowers themselves the same concrescence is maintained, and as a result, and as shown in the illustration, two flowers may be borne in a single calyx and the number of petals may be considerably greater than the normal.

THE ROSARY.

FRENCH RESEARCH ON FUNGOUS DISEASES.

The number of fungous diseases which are known to trouble our Roses now runs into double figures, but those from which we chiefly suffer are the red, the white, and the black forms, and it is in the spring, when pruning is being completed, that the first measures should be taken in the coming season's battle against them. All three forms are alike in this, that towards the end of their period of activity they produce resting or winter spores, which lodge in the cracks of the bark or remain in the soil during the winter, resuming their activity again in spring or early summer.

The red form, the well-known orange fungus or red rust, is perhaps the least injurious of the three. It seems to attack by preference the Hybrid Perpetuals and Briars, the Hybrid Teas and Teas suffering much less. It is usually first seen attacking a leaf-bud on the stem, and producing a large quantity of its red powdery spores; these should be watched for and at once removed either by cutting out the bud, or cleaning off the fungus with a rag soaked in methylated spirits or solution of copper sulphate.



From sketch by Mr. Worthington Smith.

Fig. 137.—fasciated oxlip.

The white form is ordinary mildew. The winter spores, though no doubt scattered over the ground, are often formed on the stems, and if at pruning time any stem with mildew on it is not removed, the mildew should be carefully cleaned off with a rag and spirit or copper solution.

The black form perhaps includes two fungi : rose-leaf scorch, which comes in early summer, and black spot, which appears a little later, generally just as there comes an apparent check to the growth. Black spot is far the most fatal of these diseases. A bed of Roses badly attacked is nearly ruined for a time, all the leaves may fall and the plants are seriously weakened. Mildew can and should be kept in check, though it cannot be banished, by careful syringing, but no spray that I have yet tried seems to have any material effect in checking black spot which has once seriously infected the plants. To prevent the occurrence of the disease every means that offers a chance of success should be tried. The

leaves that first show signs of infection should be removed and burnt, but interference at this stage is really too late. I have picked off basketfuls, and yet produced little beneficial effect.

Winter syringing of plants and ground with copper or iron sulphate has been recommended, but I doubt if the hibernating spores, covered and protected by their spore cases, are much affected. Where it can be done the removal of some two or three inches of the surface soil of the beds where an attack has occurred, and its replacement by fresh unpolluted soil, is on the whole the most effective means to get rid of these diseases I have yet tried, but this is not wholly successful. Probably the grass or gravel which surrounds the beds is also infested, and we are told that when the spore cases of black spot burst in spring, the spores may be thrown out so far as 10 feet, and of course the removal of these is generally impracticable. Where this is the case, treatment of the ground in the spring with some fungicide seems the only resource left to us. For this purpose we may use sulphate of copper in the form of Bordeaux mixture; sulphate of iron, either in the form of fine powder dusted over the surrounding ground, or in a solution of about 1 oz. to the gallon of water; or we may use flowers of sulphur either alone or together with lime or powdered chalk or limestone.

The value of sulphur in destroying the fungous pests of vines or for the prevention of mildew on Roses under glass is well known, and there is probably nothing better where the conditions are suitable. Its fungicidal action, however, seems to be determined by the existence of bright sunlight or at least of a moderately high temperature, and in cold, damp weather it has probably but slight effect. Where, however, the conditions are likely to be suitable the use of sulphur seems to have other beneficial action on Roses. Some years ago German writers noted that it improved the quality of the flowers, and in this connection it will, perhaps, be of interest to give some account of the recent researches of the French horticulturists* who claim by the use of sulphur and carbonate of lime to have doubled the value of manure.

The theory is that the action of the sun's rays on sulphur in the soil produces small quantities of sulphuric acid, which combine with the carbonate of lime to form gypsum (sulphate of lime) and that it is a property of gypsum to facilitate the formation of nitrate of potash (saltpetre) in the soil. Further it is stated that the sulphate of lime, in addition to encouraging the production of nitrates, tends to form double sulphates of potash and lime, potash and magnesia, and potash and ammonia, which are capable of being much more readily assimilated than are the normal, or simple sulphates. Again, with the phosphates the presence of sulphates is thought to lead to or induce the formation of easily assimilated double or triple phosphates in which potash forms one base and lime, ammonia, etc., the other.

According to this theory, given a sunny position, sulphur and carbonate of lime, or dolomite if the soil lacks magnesia, ought in principle to suffice to produce the reaction desired, but as it is only old gypsums that are thought to become producers of nitrates, it is recommended the first year to add a certain quantity of nitrate of potash. The practical application of this theory to the manuring of Roses is as follows:—The dung or farmyard manure intended to be used is dug into the ground in the usual way. Then nitrate of potash at the rate of $\frac{1}{3}$ to $\frac{2}{3}$ of an ounce per square yard is mixed with the powdered chalk or dolomite, the amount of which will vary according to the amount of lime in the soil up to a maximum of $\frac{1}{4}$ lb. per square yard. To this mixture will be added the flowers of sulphur at the rate of from $\frac{1}{3}$ to $1\frac{1}{2}$ oz. per square yard, and finally some phosphatic material such as bone meal or basic slag (but not superphosphate) is incorporated with the mixture. The mixing is to be made in the order stated. This powder must then be sprinkled over the beds in which the farmyard manure has been dug, and carefully hoed in.

While it is insisted that this method of manuring can only be really effective in positions where plenty of sunshine is available, it is stated that it gave good results even in so poor a year for sunshine as 1912.

For the moment I do not desire to criticise the theory given above, nor am I in a position to confirm or dispute the practical advice given. Whatever be the chemical reactions taking place in ordinary cultivated soil, it is probable that they are more, rather than less, complicated than was conjectured by the pioneers of agricultural chemistry.

Having regard, however, to the well-known fungicidal and bactericidal properties of sulphur in presence of sunshine, and to the prevalence of fungous diseases in our modern Rose gardens, it seems well worth the while of English rosarians to experiment with the mixture recommended by the French horticulturists. *White Rose.*

* Those interested should refer to an admirable paper by M. Godde in the *Journal des Roses*, 1913, p. 46.

INDIAN "AZALEAS."

AMONG the showiest of greenhouse plants of a shrubby character, Indian "Azaleas" occupy a prominent position. Botanically they are all varieties of Rhododendron indicum, but the generic name of Azaleas is too firmly fixed in gardens to be easily eliminated. They have for many years occupied a prominent position among plants employed for the embellishment of the greenhouse or conservatory, but, though grown as frequently as ever, great changes have taken place in the methods of culture.

Half a century ago everyone admired large specimen plants, and Azaleas were exactly suited for that form of cultivation. In those days Azaleas were, as a rule, trained in a hard and formal shape, either as standards or pyramids, and good examples when at their best presented an unbroken mass of flowers.

Though the more natural manner of growing plants that now prevails is, at least according to present-day ideas, much to be preferred, there can be no question that the large specimens of old stood out markedly as a testimony to the skill and attention of those responsible for their culture.

In those days Azaleas were largely increased in this country from cuttings; but practically all our supplies now come from Belgium, where the propagation and cultivation is a most important industry.

The majority of the plants are grafted on to stems from 6 inches to a foot in height, and disposed of when carrying neat bushy heads laden with flower buds. Most of the plants reach this country in early autumn, when, if potted and kept rather close and shaded for a short time, they quickly become established. As sent over, the plants often carry large balls of earth, too large, in fact, to enable them to be put into pots of reasonable size. When this is the case it is necessary to reduce the roots, which can be done in moderation without injury to the plants. This reduction may be so carried out that neat flowering plants can be readily accommodated in pots from 5 to 6 inches in diameter. Of course, larger specimens require larger pots.

Although most of the plants are grown on short stems, a practice has cropped up within the last few years of forming them into tall standards. The standards are not as they were of old, formally trained, but the head is allowed to assume its natural character. These standard plants are, in some cases at least, in considerable demand for various decorative purposes, as grown in this way they serve to prevent any appearance of stiffness and formality.

There remains another method of growing Azaleas, namely, as dwarf bushes in comparatively small pots. For this purpose they are struck from cuttings, and, if stopped two or three times during their earlier stages, they form neat little specimens that flower well. This practice is only followed in the case of a very few varieties, by far the most popular of them being Hexe, raised over thirty years ago from a cross between the small flowered A. amœna (then regarded as a distinct species) and one of the larger flowered sorts. The variety Hexe was in cultivation for some years before it was tried in small pots. Its popularity when grown thus proved so rapid and so lasting that of late years hundreds of thousands must have been sent to this country alone. Other varieties grown in this way, but only to a limited extent, are the pink-flowered Charles Encke, and the deep crimson Vuylstekeana.

Of the different varieties and garden forms mention may first be made of those which occur more or less in a state of nature, and have been imported to this country; and, secondly, those raised in Europe.

Some of the first used to be regarded as distinct species, but are now considered to be but varieties of Rhododendron indicum. Among these is amœna, a much-branched shrub, which is hardy in most parts of the country, where it forms a beautiful object out of doors. The flowers are purple. There are other forms which differ principally in the colour, size, and contour of the flower. One of the best is Caldwellii. Other varieties of Rhododendron indicum are:—obtusum, a twiggy bush with a profusion of small salmon-red flowers; calyciflora, resembling the preceding, but with blossoms of a hose-in-hose formation; and the most distinct of all, namely, balsaminæflorum, known also as Azalea rosæflora, and Azalea Rollisonii. This latter plant is dwarf and has a spreading habit, with narrow, rather light-green leaves, and comparatively large double blossoms of a pleasing shade of salmon-pink. Though hardy in the neighbourhood of London, it is seen at its best in the greenhouse, as, owing to its lowly stature, the flowers are liable to be splashed by heavy rains.

The garden forms are innumerable, and additions are continually being made to them. The majority of those now grown bear flowers more or less semi-double in character, though there are a good many with single blossoms, and a few that may be regarded as strictly double. At the present day those varieties that bear striped or flaked flowers are not fashionable, a remark that applies equally to those of a more or less pronounced magenta shade. Several of the more recent varieties have flowers of a deep rose or salmon-rose tint, with a light-coloured centre and margin, the latter being freely crisped. These colours show up well under artificial light, to which fact they owe much of their popularity. At one time it was considered an unusual feat to have Indian Azaleas in flower by Christmas, but now they are obtained earlier than that, as is shown by the fact that at the meeting of the Royal Horticultural Society on November 19 last a considerable number of the semi-double rose-coloured variety, Mrs. Petrick, was shown, and a fortnight later not only was this variety freely represented, but also the well-known Deutsche Perle, whose white blossoms are always appreciated, and J. B. Varonne, salmon-rose with a dark blotch in the upper part, and edged with white, with a centre of the same hue. This variety can be had in flower earlier than any other of the same type. It is a difficult matter to give a selection of varieties, as there are many, and tastes differ, but the following, with the three above mentioned, are all good:—A. Borsig, white; Apollo, scarlet; Charles Leirens, salmon-red; Chicago, carmine-rose, edged white; Cocarde Orange, orange-scarlet; Dr. D. Moore, deep rose; Flambeau, intense carmine-crimson; J. T. D. Llewelyn, deep pink with carmine centre, light

edge; Madame Hermann Siedel, white; Mémoire de Louis Van Houtte, deep rose; Niobe, ivory white; Oberst Van Kutzinski, brilliant scarlet; Postmaster-General Stephen, deep carmine; President Oswald de Kerckhove, pink, edged white; Professor Wolters, salmon-pink, with a crisped white margin, very early; Roi de Hollande, orange-red; Schryveriana, rose with white centre and edges, good late variety; Spitfire, bright red; Vervæneana, deep rose, marked white; Vervæneana alba, a white sport of the preceding; and Vuylstekeana, a small flower, but of an intense bright crimson colour. *W. T.*

FLORISTS' FLOWERS.

VIOLAS.

There is much that is interesting in growing and watching the development of the flowers of a good collection of Violas. The colours are very varied, whilst the size of one variety differs much from that of its neighbour. In their pleasing perfume they are interesting, while for cutting they are more useful than many people suppose, for arranged in low, flat bowls over moss or in sand they are attractive and last quite a long time in a fresh condition, especially if the flowers are cut in a young stage of development.

The Viola is truly an amateur's flower, requiring little space, as it may be utilised as an edging for beds and borders. With attention to watering during dry weather, and if the seed capsules are picked off promptly, the plants will continue to flower uninterruptedly until autumn.

The following varieties are to be recommended. I prefer rayless flowers myself, as I consider that rays tend to spoil the colour effect, especially in white or yellow flowers.

The following varieties are rayless:—Bridal Morn, pale, heliotrope-blue; Cream King, cream; Cygnet, creamy-white, large; Elsie L. Hancock, primrose-yellow with orange-coloured eye; Florence Moore, a cream-coloured flower, circular in outline and very refined, free-flowering; Harry Bamber, purple-heliotrope, with white centre; Helen Smellie, white, edged with blue; Isolde, a large, deep-yellow flower; Lady Knox, primrose-yellow; Mary Burnie, creamy-white or primrose, edged with dark heliotrope; Mrs. E. A. Cade, bright yellow with orange-coloured centre; Mr. H. Pearce, pure white self with yellow eye; Nellie Harston, creamy-white centre, bordered and suffused with greyish lilac; Peace, creamy-white, tinted with heliotrope; Pembroke, a bright yellow self; Reggie, upper petals puce, lower petals lavender colour with cream-white centre; Royal Sovereign, rich yellow; Seagull, pure white, with yellow eye; Sunbeam, primrose-yellow, marked with blush-heliotrope, a large circular flower; White Empress, a large, creamy-white flower; Wm. Lockwood, a yellow flower of immense size and full exhibition quality.

The following have rayed centres:—Brenda Speaight, a large circular flower of good form, dark plum colour paling towards the edge; Charles B. Murray, crimson, striped with pink and rose; Constance Leonora, rich-yellow, with orange-coloured eye; Dr. McFarlane, upper petals mauve, lower petals dark yellow; Duchess of Fife, primrose-yellow margined with blue; Elisabeth de Pinna, a lilac-coloured self; G. C. Murray, bottom and side petals almost black, top petal light blue; Goldfinch, yellow, margined with bluish-purple; Grace J. Reynolds, blackish velvety centre, edged with lavender; Gold, a large flower of orange colour; Henry Hamilton, deep violet centre, upper petals pale lavender; Hugh Reid, rosy-purple, top petals lighter; James Pilling, white with lavender-blue margin, a grand bedder; Jenny Houston, a rosy-purple self, darker round the distinct eye, upper petals light rose; Kate Blyth, white, daintily edged with lavender-blue; Kate Cochrane, lower petals crimson-purple with a trace of lavender, upper petals pale lavender; Kathleen, white ground with a heavy edge of bright purplish red; Lady Grant, large white centre with edge of bluish purple; Luiggi, an immense primrose-coloured flower; Lizzie Wallace, a large flower, heliotrope self; Louise Grimwood, rose-coloured ground, striped and shaded with dark rose and crimson; Maggie Mott, mauve self, an excellent variety for planting in beds; Mrs. A. Gilmour, large, bluish-lilac flower; Mrs. A. Harvey, white centre heavily belted with purple-maroon; Mrs. Chichester, marbled purple on white ground; Mrs. J. H. Rowlands, a clear, distinct rose; Mrs. W. H. Gabb, cream ground with a neat band of heliotrope; Nettie Macfadyen, top and bottom petals claret-coloured, streaked with French grey; Royal Blue, a most effective bedding variety of a deep imperial blue; Ruby V. M. Finley, the centre of the flower is yellow with a broad band of copper-bronze; Stobhill Gem, deep purple; Will Farmer, large white flower edged with purple; and Wm. Neil, pale rosy-pink. *E. M.*

TREES AND SHRUBS.

CORRECT NAME OF THE NORTH AMERICAN LIBOCEDRUS.

This tree was first described and figured as Thuja Craigana by Balfour, in Murray, *Bot. Exped. Oregon*, 2, pl. v. (1853). In the following year it was published as Libocedrus decurrens, Torrey, in *Smithsonian Contrib.* VI. 7, t. 3 (1854). According to the Vienna Rules, the name that must be adopted is Libocedrus Craigana, Low, ex R. Brown, in *Trans. Bot. Soc. Edin.* IX. 373 (1868). Gordon, *Pinet. Suppl.*, 102 (1862), quoted under Thuya gigantea, Nuttall, the name Libocedrus Craigiana, Low; but it is uncertain whether he meant to indicate Thuya or Libocedrus, and in any case he spelled the specific name incorrectly. It is quite clear, however, from Brown's account that Low's plant was the North American species of Libocedrus Cf. Clinton-Baker, *Illust. Conif.* ii. 66 (1909), where I am quoted as the authority for Libocedrus Craigana, the credit of which must be given to Low. *A. Henry.*

APPLE PRESENT VAN ENGELAND.

We are indebted to Mr. H. Rabjohn, of Twickel Gardens, Delden, Holland, for the photograph of the distinct-looking Apple reproduced fig. 138, and the following particulars. "Apple Present van Engeland is largely grown in this country, where it has become a general favourite. The fruit finds a ready sale in the markets. It is one of the best cooking Apples I know, and keeps well into April. This Apple has been the subject of not a few articles in the leading horticultural papers here (Holland), but its history seems wrapped in mystery, especially as it is considered new, and, as its name suggests, a present from England. I have submitted specimens to authorities in England, but no one appears to know the variety. The shape is both unique and distinct. The fruits are large, beautifully coloured and have a striking appearance."

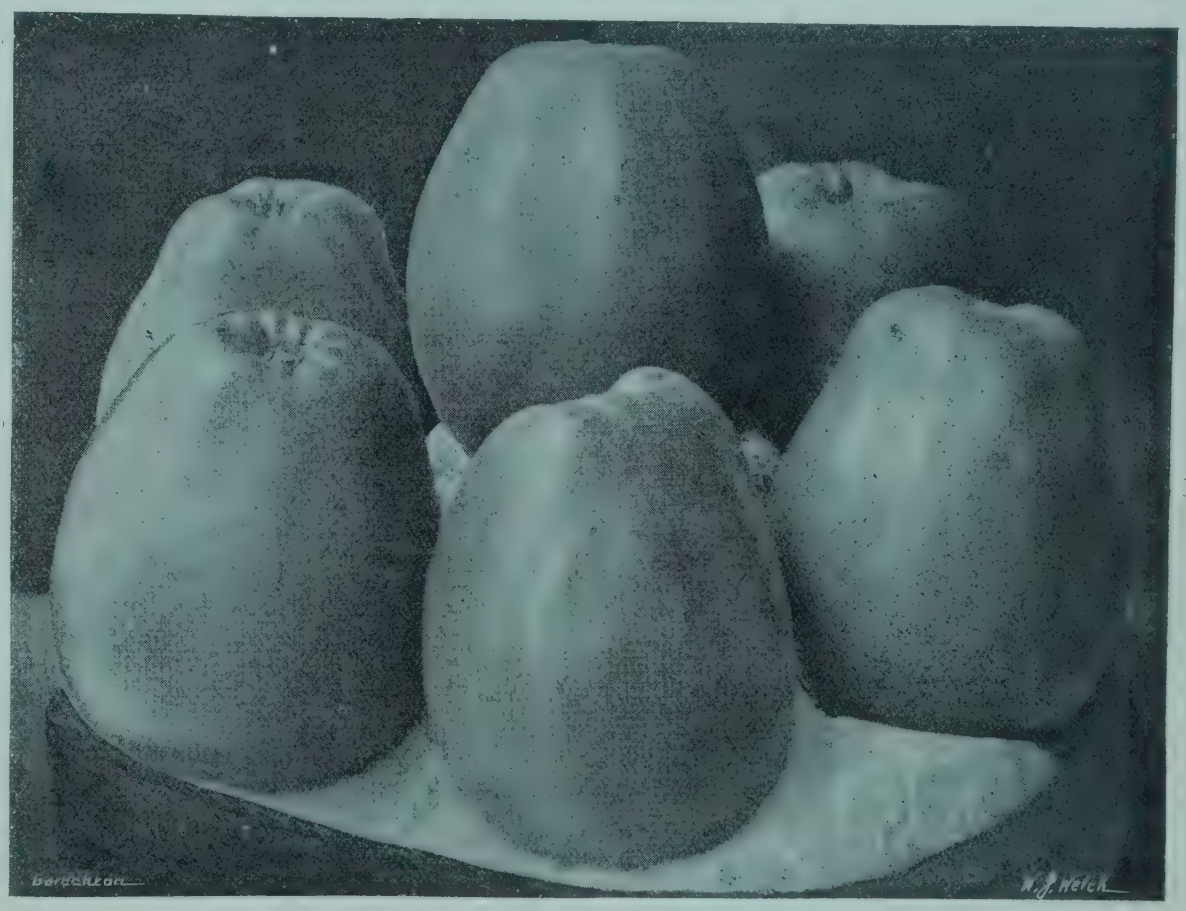


Fig. 138.—APPLE PRESENT VAN ENGELAND.

NOTES FROM IRELAND.

FORTHCOMING SHOWS.

A large exhibition of Sweet Peas will be held at Moy on July 29. Mr. Edward Cowdy, a well-known Irish Sweet Pea specialist, will display a collection of novelties, and give a lecture on the subject of culture.

Mr. Atlee Burpee, of Philadelphia, U.S.A., is presenting a valuable prize for competition, and the show is attracting much attention among Sweet Pea growers. Most of the horticultural exhibitions in Ireland are expected to show improvements on those of former years, including the shows at Ennis, Co. Clare; Armagh; Ballinasloe, Co. Galway, the usual spring shows in Cork, Dublin, Belfast, and Portadown, and many smaller ones, which will take place in conjunction with agricultural exhibitions. *W. A. M.*

The Week's Work.

PLANTS UNDER GLASS.

By F. JENNINGS, Gardener to the DUKE OF DEVONSHIRE, Chatsworth, Derbyshire.

ROSES.—Pot Roses which have finished b'ooming should be placed out-of-doors on an ash bottom, and exposed to the full rays of the sun. The roots should be fed liberally with manure water during the summer; as autumn approaches the root-waterings may be reduced somewhat, so as to allow of the ripening of the wood, but not so much as to cause the soil to become quite dry.

RICHARDIA AFRICANA. — Plants which have passed out of flower should be hardened off, either out-of-doors, or in a cold frame, preparatory to repotting or planting them out; the latter method is the better if large specimens are required. Make a trench, such as for planting celery, and place a quantity of decayed cow-manure and leaf-mould at the bottom. If the soil is poor add a quantity of good loam. The roots should be planted in the trench, allowing each plant plenty of room for growth. It is advisable to support the main growth with a stake, securing the side growths loosely. The plants will require plenty of water, and the trenches may be flooded, at first with clear water, and later with liquid manure. Plants which are to be potted may be divided if it is desired to increase the stock, or, if not, they should be transferred to pots of a larger size. The compost should consist of a mixture of rich loam, leaf-mould, coarse sand, decayed cow-manure, and a little wood ash and bone meal. When the plants are in full growth they require an abundance of water at the roots.

MOSCHOSMA RIPARIUM.—Plants required for flowering in January should be propagated from cuttings inserted now. Three cuttings should be placed in each 60-size pot; they should be inserted around the edge of the pots in porous soil, and rooted in a close frame provided with mild bottom heat. Guard against the cuttings "damping off" through moist, close conditions. When they are rooted transfer them to 4-inch pots, and later into 6 or 7-inch pots, in which they will flower. After the final potting grow the plants in an intermediate house during the summer and early autumn. They should be flowered in a stove or warm house.

THYRSACANTHUS RUTILANS.—If cuttings of this stove plant have not already been inserted this should be done at once. Each cutting should be planted singly in a small thumb-pot, and placed on a brisk bottom heat in a close frame, or under a bell-glass. When rooted, they should be transferred to 54 size pots, and, if necessary, pinched. For the final potting employ receptacles having a diameter of 6 or 7 inches, and a compost consisting of equal parts rich loam and leaf-mould, with the addition of coarse sand and wood ashes. After the plants are established grow them in an intermediate house during the summer, and flower them in the stove in the winter.

VARIOUS INDOOR FLOWERING PLANTS. — Ruellia macrantha, Justicias, Beloperone oblongata, and Lasiandra macrantha are ready for shifting into 6 or 8½ inch pots. These plants should be grown in an intermediate house. Hydrangeas in pots should, if growing freely, be fed liberally with artificial and liquid manures. Frequent fumigations will be necessary to keep down insect pests, especially aphides, which do considerable damage to the flower heads. Plants of Begonia Gloire de Lorraine raised from cuttings inserted early in the season should be shifted into larger pots. Mix plenty of leaf-mould with the soil, and do not pot too firmly. Bouvardias should be kept pinched, and grown in a warm house or frame. Each morning and afternoon, immediately before closing the house, the plants should be syringed. Plants raised from cuttings early this spring should be ready for their final potting. In the case of plants of Aspidistra lurida the drainage should be overhauled, and the stock increased, if necessary, by division. Pot suitable portions in a compost of loam, leaf-mould, peat, and sand, with the addition of wood ashes, broken crocks, and a little soot. The plants should be placed in a warm house or stove until they have become established. The remaining plants should be top-dressed with similar compost, containing a little bone meal and decomposed cow-manure. Plants of Grevillea robusta and different species of Acacia and Eucalyptus raised from seed should be potted as soon as possible; if they remain too long in small pots they will lose their bottom leaves.

FRUITS UNDER GLASS.

By JAMES WHYTOCK, Gardener to the Duke of BUCCLEUCH, Dalkeith Palace, Midlothian.

EARLY VINERY.—Admit plenty of air to early vineries when the Grapes are colouring or approaching the ripening stage. Open the ventilators more or less according to the weather and maintain a warm, dry atmosphere. If the inside border requires moisture afford a copious watering, and afterwards cover the surface with some loose, dry material that will act as a mulch. If the vines are healthy, with thick green foliage, everything should be satisfactory until the Grapes are cut, when the vines will need syringing on frequent occasions with soft water and occasionally with an insecticide to destroy red spider. If the leaves are infested with red spider before the Grapes are removed, do not practise syringing, but sponge the foliage with an insecticide.

SUCCESSIONAL VINERY. — Make the most of the sun's heat in succession vineries where the Grapes are swelling, increasing the amount of ventilation in the forenoon as the sun gains power. Close the ventilators early in the afternoon when the atmosphere of the vinery is very warm, as this will obviate the use of much fire-heat to maintain the mean night temperature of 65° or 70°, according to the weather. With increased sunshine and more ventilation promote a moist atmosphere by sprinkling the paths and borders frequently. Established vines that have cropped for several years past may be fed with manure water. Let this material be made rather weak, for it is better to apply a little and often than to give strong doses at one time. But do not apply this stimulant unless the soil is porous and the drainage efficient. It will be advisable to make an examination of the border to see if moisture is needed, as an excessively wet soil is more harmful than one that is dry. The surplus bunches may be removed from late vines when the berries have set. Overcropping must be prevented, as this only results in imperfect fruits and is ultimately injurious to the vines. Do not delay the thinning of the berries even though they be quite small. Different varieties of Grapes require different treatment in this respect; if the bunches are required to remain on the vines until next January they should be thinned much more severely in their centres than those that will be sent to the table immediately they are ripe. Varieties that will carry the bunches until next year include Black Alicante, Mrs. Pince, Appley Towers, and Lady Hutt. The berries of Muscat varieties swell unevenly, and for this reason their thinning should not be practised so soon as the others. Madresfield Court should be well thinned, and this variety requires plenty of air from the time the berries commence to colour, as this will largely prevent the Grapes cracking. The laterals may be tied to the wires, and those that are carrying bunches shortened to two eyes beyond the bunch. All laterals on the shoots should be cut back to one eye. This treatment will give the foliage room to develop, as overcrowding of the leaves is harmful. As soon as the bunches are all thinned keep the atmosphere warm and moist, allowing the temperature to rise to 85° or 90° with sun heat, when the vinery must be well ventilated. Close the ventilators early in the afternoon, so that the temperature may keep fairly high until well into the evening. If the borders are in a proper condition to receive moisture after the Grapes are thinned manure water may be afforded the roots or vine manure may be sprinkled over the surface and watered in. When this has been done apply a light mulching of half-decayed stable manure.

LATE VINERY.—The latest vines that have just started into growth should be disbudded, training those shoots that are required for furnishing the trellis by degrees to the wires. Keep the atmosphere moist by damping the paths and bare surfaces of the vinery daily. The mean temperature should be 65° rising to 70°, when the vines are in flower, or in the case of Muscats 75°. During times of sunshine the temperature may rise 15° higher provided plenty of air is admitted. Young vines in their second year of planting that have been cut hard back and were started into growth in April or March should be encouraged to develop as much as possible. At least two strong shoots should be retained on each vine. These should be stopped later, when they have grown half-way the length of the rafter, to cause them to break again and ultimately grow the whole length of the roof.

THE HARDY FRUIT GARDEN.

By B. GOODACRE, Gardener to Sir ERNEST CASSEL, Moulton Paddocks, Newmarket.

WALL TREES. — Fruit trees planted against walls are growing freely and considerable attention must be paid to such details as watering, disbudding and pinching the shoots. All kinds of insect pests must be sought for and destroyed. If syringing is practised it should be done after the growths have been regulated.

PEACHES.—It is time to complete the disbudding of Peach trees, and foreright shoots, or those that grow from the face of the wall at right-angles, should be removed first. In the case of newly-planted or young trees some of these shoots may be required for furnishing the space, in which case the most suitable branches should be retained and nailed to the wall. It will suffice to retain, in the case of fruiting branches, two or three growths; the others may be removed, but always leave a terminal shoot, and one at the base which may furnish the fruiting wood next season. Such shoots as have swelling fruits at their bases should not be rubbed out entirely, but pinched back to two or four leaves. These growths may be removed later when thinning takes place. If these particular fruits are not required, there being plenty without them, they may be removed, but great care must be taken not to tear the bark in doing so. This precaution is all the more necessary as the bark gets older and the fibres stronger.

APRICOTS.—Apricots should be thinned whilst they are very young. The operator must be guided in this matter by the size the fruit is expected to attain, and the constitution of the individual trees. Always aim at having the fruits evenly distributed over the tree, allowing the stronger and more vigorous branches to carry the larger number. The fruits that are removed in thinning will make excellent tarts. The Apricot is a deep-rooting tree, therefore when water is applied see that sufficient is given to soak right through the border. It is better to do the watering on one or two occasions in succession, allowing the first application to soak well into the ground before applying the next. Should the border be sloping throw up some of the soil to form a ridge to prevent the water running off the surface. It is a good plan to make a number of furrows along the border for this purpose, when the lie of the ground is such that there is a danger of the water not soaking in. Apricots are subject to mildew, and this disease is very prevalent where the trees are grown under copings, the cause of mildew appearing being drought at the roots. Use soft rain water whenever it is possible to obtain it. If spring water is used it should be drawn off and allowed to stand in a receptacle for a day as it will then become slightly tepid. The best treatment for mildew is flowers of sulphur, which should be dusted on the trees, or the foliage may be sprayed with the "Abol" preparation in a diluted form. This specific should be applied in the evening, and it will be necessary to shade the tree the following day if the sun shines brightly, as there is a danger of the young foliage becoming scorched. A small, yellow caterpillar is a great pest of the Apricot, injuring both the leaves and the fruits. This pest should be hand-picked and destroyed. The caterpillars are usually found between two leaves, which are

stuck together, forming a hiding place. After a thorough search has been made for the caterpillars syringe the trees with a weak solution of nicotine.

General Work. — All protective materials used for fruit trees may be removed and stored for next season. If nets, tiffany or similar materials have been employed, let them be dried thoroughly before placing them in the storeroom. In seeing to the requirements of the trees it has necessitated trampling the border, therefore the soil should be forked lightly on the surface, drawing back the mulching of straw to permit of this being done. It often happens that, through the border drying, the soil shrinks away from the wall, leaving a crevice. When the surface has been broken up ram the soil well up to the wall and then give the trees a thorough soaking with clear water. Later the mulching materials may be placed again in position, and the ground will then remain moist for several weeks.

THE KITCHEN GARDEN.

By John Dunn, Foreman, Royal Gardens, Windsor.

Tomatos.—Tomato plants intended for cultivation in the open air should be ready for potting. They should be placed in 6in. pots, the soil to consist of two parts turfy loam to one part of leaf-mould, pressed down rather firmly about the roots. The pots may be placed in a cool pit near to the roof glass, and the soil watered very sparingly. The pit should be kept closed for a few days until growth commences, after which more air should be admitted, and the ventilation increased in quantity until the plants are hardened and ready for planting in their fruiting quarters. They should be planted on a warm south border, or against a wall or fence. The plants should be confined to single stems, supported by a strong stake, driven into the ground when the plants are placed in position. If planted against a wall, eighteen inches should be allowed between the plants, in order to provide sufficient light and air. Tomato plants in pots, from which the fruit is being gathered, should be watered frequently with liquid manure; or the surface of the soil may be sprinkled with artificial manure and afterwards moistened with clear water. Plants for succession are ready for transferring into the fruiting pots, and should receive all possible encouragement, so that supplies may be obtained from them before those of the previous batch are exhausted. Ten-inch pots are the best receptacles for this batch; they should be thoroughly well drained, so that the plants may be given liberal supplies of manure water whilst the fruit is swelling, without danger of the soil becoming sour. The compost should consist of three parts turfy loam to one part decayed manure. A sprinkling of small bones may be placed over the crocks. A sowing of a suitable variety should be made now to yield supplies in August and September.

Peas.—Main crop varieties should be sown to produce pods in August. The position selected for this sowing should be as open as possible, preferably on a rather heavy soil. The seeds should be sown thinly, and covered with two inches of the finest soil taken from the trenches, which should be at least four inches deep. The remainder of the soil can be worked in amongst the plants before the sticks are placed in position. Superlative, Matchless Marrow, Royal Salute and Distinction are good varieties to sow. Most of the second early varieties will now be sufficiently advanced to require attention. New sticks are the best for staking, and they should be pushed well into the ground to prevent them being blown down by the wind. Only just sufficient sticks should be used to keep the plants in an upright position, or too much light and air will be excluded from the plants.

Spinach.—Frequent sowings of Spinach should be made from now onwards. As the season advances cooler situations should be selected for this crop. A border, facing east, but protected from the afternoon sun, is the best position. The soil between the rows should be stirred frequently with the Duch hoe. New Zealand Spinach makes an excellent substitute for Summer Spinach, especially in hot weather, when it always seems to thrive best. It produces large quantities of dark green leaves, the quality of which is much better than that of Spinach Beet. New Zealand Spinach may be sown in small pots and placed in a cool pit until the plants are large enough to grow out-of-doors. When properly hardened, they may be planted in rich soil, allowing a space of two feet between the plants each way; or seeds may be thinly sown in drills two feet apart and two inches deep.

Asparagus.—In cutting Asparagus care must be taken that the crowns are not injured by the knife. Crops of Asparagus are quite ten days later than last year, and it will be necessary to stir the surface of the beds, which has been beaten down by recent rains. A sprinkling of artificial manure should be applied at the same time. If it is necessary to keep the shoots a few days after they are cut, the water should be changed twice daily: there should only be sufficient water at any time to cover one inch of the shoots, and the portion covered should be cut off before the Asparagus is cooked.

Radishes. — Frequent sowings of Radishes should be made in rich soil. Afford the plants liberal supplies of water to ensure a quick growth.

THE ORCHID HOUSES.

By W. H. White, Grower to Sir Trevor Lawrence, Bart., Burford, Dorking.

Cœlogyne.—Plants of Cœlogyne cristata, its distinct variety Lemoniana, and the pure white C. c. hololeuca have started to grow again and require attention at the roots. Specimens that need additional rooting space may be repotted, whilst those that have grown very large, as well as those that have become bare in the centre, may be divided and placed into smaller pots. It is not advisable to disturb any of these plants if they are in a satisfactory condition, even although a few strong pseudo-bulbs may have grown over the edge of the pan or pot away from the rooting materials. Such growths may be severed with several older pseudo-bulbs attached and be either potted separately or made up into small, compact specimens. Plants that are bare in their centres may be afforded additional soil and made good with surplus portions from other plants, pegging the new growths in the middle of the pan, where they will soon become established. C. c. hololeuca being a scandent grower, the leading pseudo-bulbs soon grow beyond the limits of the receptacle, and the roots cannot reach the compost. These straggling pieces should be twisted carefully inwards on to the compost and pegged firmly on the surface, where they will soon become re-established. A suitable compost consists of good fibrous loam, Osmunda-fibre and Sphagnum-moss in equal parts. Each material should be cut up and well mixed together, adding plenty of small crocks to make the compost porous. Afford efficient drainage, as an abundance of water is necessary during the growing period. This very useful Orchid and its varieties will succeed in almost any house where an intermediate temperature is maintained. Well-established plants need plenty of light, and towards the end of the growing season they may be stood in direct sunshine; but plants that are re-potted should be shaded carefully until they are re-established. Strong, well-rooted plants need an abundance of moisture, but those newly-potted should be watered very sparingly for a time. Should the pseudo-bulbs shrivel after potting do not deluge them with water: if they are sprayed lightly occasionally they will, when new roots appear, return to their normal plump condition. Other Cœlogynes that succeed in an intermediate temperature are C. conferta, C. speiosa, C. barbata, C. elata, C. corrugata, C. Sanderiana, C. graminifolia, C. ocellata, C. odoratissima and C. flexuosa. These species, and many others that are commencing to grow, also any that require larger pots or fresh rooting material, should be given attention. C. flaccida is also a cool-growing species, but it should be planted in a basket. C. Massangeana and C. tomentosa also grow best in baskets, but they need a much warmer temperature. C. asperata Lowii, C. pandurata, C. Cumingii, C. Rossiana, C. peltastes, C. Micholitzii, C. Lawrenceana and the hybrid C. burfordiensis should also be grown in a warm house. Ordinary flower-pots or shallow pans suit the majority of Cœlogynes. C. burfordiensis and its parents, C. pandurata and C. asperata Lowii, need plenty of Sphagnum-moss mixed with the soil, or this material may be planted thickly on the surface of the compost.

Cymbidium.—C. eburneum, C. Tracyanum, C. Mastersii, C. affine, C. chloranthum, C. eburneum-Lowianum, C. insigne, C. longifolium, C. Colmanæ, C. aloifolium, C. Woodhamsianum, C. Pauwelsii, C. Gottianum, C. I'Ansonii, C. Schlegelii and C. Wiganianum all thrive well in a cool, shady part of the intermediate house. Any of these plants may, if they need repotting, be attended to in this respect when the new growths are a few inches high, or soon after they pass out of bloom. The majority of Cymbidiums that have thick, fleshy roots require rather large, well-drained pots. For a compost use good fibrous loam and Osmunda-fibre in equal parts. Cut the Osmunda up rather small so as to incorporate it well with the loam. Add a moderate quantity of leaf-mould, a little coarse silver sand and small crocks in sufficient quantity to keep the soil porous. Press the compost down with moderate firmness and keep the base of the plant just below the rim of the pot. The soil should be arranged about half an inch below the rim to provide space for water. Cymbidiums do not always need repotting when they become pot-bound; fresh compost is generally afforded when the soil has deteriorated or when the plants absolutely need larger receptacles. Established plants may remain undisturbed for several years, particularly C. Lowianum, C. Hookerianum, C. giganteum and C. eburneum, as they usually produce flower-spikes more freely when in a pot-bound condition. C. devonianum produces pendulous flower-spikes; this plant is therefore best grown in a teakwood basket. All Cymbidiums require plenty of water when they are rooting and growing freely, but during the resting period only a little moisture should be afforded.

THE APIARY.

By Chloris.

Removing Sections.—Immediately the sections are filled they should be removed, or they will be spoiled by travel stains, which detract from their appearance and cause loss of points on the show bench. When undertaking this task use very little smoke, for the bees in their agitation and desire to gorge with honey will puncture the capping and cause them to "weep." The process may be rendered safe by using the Porter bee escape.

Fruit-Tree Blossom. —Fruit trees being now in bloom this is the time to add sections and shallow frames to any colonies that are strong, and in cases where the top cells in the brood chamber are tipped with new, white wax. The sections of wood should be warmed in the oven, and the inside portions covered thinly with wax, applied with a paint brush, and avoiding the V-shaped joints. By this means the bees will be induced to build out to the wood on all sides, thus increasing the value of the honey for sale. Afterwards moisten the joints with hot water, and when they have become soaked, fit in full sheets of extra thin super foundation of worker base, but do not allow the foundation to touch the bottom within a quarter of an inch. Employ split and grooved two bee-way sections. Some beekeepers employ T-shaped girders, but these prevent the sections from fitting tightly at the back, and thus spaces are left which are always filled with propolis. To prevent this and reduce the amount of scraping at the end of the season, wooden girders, about $\frac{3}{8}$ of an inch deep and $\frac{7}{8}$ of an inch wide, will be found more convenient to entice the bees to readily enter the sections; wrap them up warmly so that they are not draughty, and place a few bait sections on the outside. Generally speaking, it will be found that swarms produce the best sections, for they are always good comb builders. An early swarm may be placed on shallow frames containing drawn-out worker comb; over these put a new excluder, and then a rack or even two of sections.

Where swarms are not desired they may be prevented by placing a rack of shallow combs below the brood chamber. These should be fitted with foundation of worker base, or, better still, with drawn-out worker comb. By this means we prevent the overcrowding which leads to swarming.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the **PUBLISHER**, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher. — *Our Correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the* PUBLISHER; *and that all communications intended for publication, or referring to the Literary department, and all plants to be named, should be directed to the* EDITORS. *The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.*

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS, 41, Wellington Street, Covent Garden, London.** *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

Special Notice to Correspondents. — *The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

Illustrations.—*The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.*

Local News.—*Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.*

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, MAY 20—
Roy. Hort. Soc. Sh. at Royal Hospital Gardens, Chelsea (3 days).

WEDNESDAY, MAY 21—
Nat. Tulip Soc. Sh. at Royal Hospital Gardens, Chelsea (2 days). Devon County Sh. at Barnstaple (3 days). Roy. Meteorological Soc. meet.

SATURDAY, MAY 24—
Linnean Soc. Anniversary meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich—54.6.

ACTUAL TEMPERATURES:—
LONDON.—*Wednesday, May 14* (6 p.m.). Max. 68°. Min. 47°.
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London.—*Thursday, May 15* (10 a.m.); Bar. 29.7. Temp. 57°.
Weather—Raining.
PROVINCES.—*Wednesday, May 14.*—Max. 63° Peterborough; Min. 50° Preston.

SALES FOR THE ENSUING WEEK.

WEDNESDAY NEXT—
Hardy Bulbs and Plants at 1; Japanese Liliums and Bulbs from the Cape, at 3.30; Palms and Plants at 5; 250 magnificent Orchids by Order of Messrs. Sander and Sons, at 1. By Protheroe and Morris. At 67 and 68, Cheapside, E.C.
Clearance Sale of Bedding Plants, 12 o'clock. By Protheroe and Morris. At 158, Ravenscroft Road, Beckenham.

THURSDAY NEXT—
Rare and valuable Orchids from well-known collections, at 1. By Protheroe and Morris. At 67 and 68, Cheapside, E.C.

The Digestive Juices of Plants.

It has long been known that both plants and animals carry on their various chemical operations by means of specific agents known as enzymes. Thus, when a plant requires the starch which is stored in its leaf, tuber or elsewhere, a special enzyme, diastase, is put in contact with the starch grains, corrodes them, and converts the starch into sugar. The mode whereby the animal makes use of the starch which occurs in its food is precisely similar to that employed by the plant. Both saliva and pancreatic juice contain diastase, and hence such starch as escapes the action of saliva —and in these days of quick lunches much escapes—is acted on by the diastase of pancreatic juice and is hydrolysed to sugar. Each of the many chemical actions which go on in the body is presided over by a specific enzyme, of which the starch-converting diastase may serve as an example. The digestion of proteins — the complex nitrogen-containing substances which are of special nutritive value—is effected by stages, and for each stage there is a special enzyme. In the animal these proteolytic enzymes are contained in the gastric and pancreatic juices. Since the processes of digestion are similar in plants and animals, we shall expect to find that proteolytic enzymes occur in plants as well as in animals. This expectation was realised long ago by the classical investigations on the substances excreted by insectivorous plants, such as Drosera and the Pitcher plant (Nepenthes). These substances bring about the solution of proteins in a way similar in all essentials to that whereby the proteolytic enzymes of animals act.

The fact that the protein-digesting enzymes of plants are readily demonstrable in the case of insectivorous plants is apt to give rise to the idea that their occurrence is exceptional and bound up in some special way with the curious and uncanny habit of Nepenthes and Drosera. This, however, is not the case. What happens in these happens in all plants, and the only peculiarity of the insectivorous plant is that it produces—in accordance with its special habit—a relatively large and hence readily recognisable amount of proteolytic enzyme.

In passing, it may be pointed out that the insectivorous habit of Drosera is the expression of a device for satisfying "nitrogen hunger." The insectivorous plant lives in situations in which the amount of available nitrogen is low. It runs the risk of nitrogen starvation and overcomes that risk by an exiguous diet of flies. Leguminous plants, as is well known, save themselves from similar starvation and satisfy their nitrogen-hunger by first permitting nitrogen-fixing bacteria to take up a lodgment in their roots, and then by digesting the lodgers and all their stores of nitrogen.

The formation of proteolytic enzymes by the insectivorous plant is therefore to be regarded only as a special case of a general phenomenon, and that this is so is evident from the fact that similar proteolytic enzymes occur in considerable quantities in many other kinds of plants. They have been extracted from the Papaw, the Pineapple, the Fig, the Paper Mulberry (Broussonetia papyrifera) and many other plants.

The only reason why similar enzymes cannot be obtained readily from every plant is because plants are economical beings so far as the use of nitrogen compounds is concerned. They make a little go a long way, and hence they only require minimal quantities of the agents which change and dissolve the proteins.

Nevertheless, recent experiments by Messrs. Gerber and Guiol (*Bull. Soc. Bot. de France* 59, 1912) have brought to light the somewhat surprising fact that the enzymes of certain plants are much more powerful than those of animal origin. Thus, a mixture of diastatic and proteolytic enzymes, which may be obtained easily from the latex of the Fig (Ficus Carica) is shown to act on protein twice as vigorously as pancreatin which is of animal origin.

Again, from the latex of the Paper Mulberry a similar mixture of enzymes is obtained; in this case, although the proteolytic enzyme is only equal in activity with one of animal origin, the diastatic enzyme is ten times more active than animal diastase.

Finally, it need only be added that the fundamental importance to the plant of these and other enzymes lies in the fact that chemical processes, which, without their co-operation, proceed only slowly and at high temperatures, are made to take place rapidly at the comparatively low temperature in which the plant lives. By their means stores of food laid down in the root or in the wood or elsewhere are rapidly mobilised in and put at the service of the burgeoning tree, and by this act it is that the transformation scene of spring is as amazingly rapid as it is supremely beautiful.

The Sexual Spores of Phytophthora infestans.

Recent work on the problem of the existence of sexual spores (oospores) in Phytophthora infestans has revived old controversies. Many years ago Worthington Smith described in this journal the occurrence of such spores; but de Bary, the greatest authority on such questions, maintained that the structures described by Worthington Smith were not the sexual spores of the late blight fungus. There the matter rested for many years, and, despite the fact that to determine whether oospores are formed is a matter of the greatest economic importance, little or no further investigation was made.

In the meantime it was shown that Phytophthora infestans may be cultivated on various living media, and it was claimed that this fungus may live—presumably in the soil—as a saprophyte. The next step in the course of discovery was taken by Clinton, who succeeded, in 1911, in cultivating Phytophthora infestans in artificial media, and thus demonstrated that the fungus is a facultative parasite—that is, an organism which may exist saprophytically on dead organic matter or parasitically in the living host.

Further investigation by Messrs. Pethybridge and Murphy (*Sci. Proc. Roy. Dublin Soc.*, XIII., No. 36) has confirmed Clinton's discovery, and has also brought to light a number of interesting facts concerning the mode of formation of the male and female sexual organs—oospheres and oogonia. Oogonia are produced when the fungus is cultivated on Quaker-oat agar or on oat-juice agar. The oogonia arise, generally, each as a terminal swelling on stout, lateral hyphæ, and as the oogonium develops its wall turns brown. Even in the absence of the male reproductive organs—the antheridia—the oogonia produce oospheres, and the latter develop without fertilisation into "sexual spores." So far, however, the germination of the oospores has not been observed. In addition to oogonia the fungus produces



Photograph by W. Willcocks.

POLYGONUM POLYSTACHYUM IN STRAFFAN HOUSE GARDENS, CO. KILDARE.

Printed by Temple Press Ltd., London, E.C.

antheridia. The latter are spherical or oval structures borne on the tips of hyphæ, and are not produced on the hyphæ which bear oogonia. According to the description of Messrs. Pethybridge and Murphy, it appears probable that the antheridia come to lie within the lower part of the oogonium. Fertilisation of the oosphere by the contents of the antheridium has not been observed, and hence we must conclude provisionally that it is normal for the oospores of Phytophthora infestans to be produced parthenogenetically. The authors have not yet been able to satisfy themselves that oospores are formed in the Potato tuber, although they have observed brown, thick-walled spores, which may perhaps be the sexual spores of this fungus. It is to be hoped that further investigation of this point will be made; for were it proved that resting spores are produced within the tuber light would be thrown in the mode of recurrence, year after year, of this dreaded fungus. Oospores produced in the tubers would, as the tubers rotted, be liberated in the soil; there they might germinate, infect the soil, and the latter might convey the infection to the young Potato plants.

Supplementary Illustration.—The Knotweeds (Polygonum) include many excellent garden plants. Some are beautiful climbing species, whilst others—such as P. polystachyum—form compact plants suitable for planting in the flower border, the wild garden, or boggy land. The specimen depicted in the Supplementary Illustration is growing in Straffan House gardens on the banks of the river Liffey. The gardener, Mr. Bedford, informs us that the plant is often submerged in so much as 4 feet of water during autumn and winter, and that it has been in its present position for three years. The specimen is about 4 feet high, and is at its best throughout September and early October. At Gunnersbury House, Acton, P. polystachyum is planted along the margins of a lake containing a collection of Nymphæas. In such situations the plant is very effective. The species is a native of the temperate Himalaya region, and forms a hardy shrub, bearing white or pink flowers.

Odontoglossum Princess Mary. — On Thursday, 15th inst., Messrs. W. Bull & Sons had the honour of receiving a Royal command to submit this new Odontoglossum to Princess Mary's inspection at Buckingham Palace. The presentation took place in the course of the same day.

Notes from the Royal Botanic Garden, Edinburgh.—No. 36 of the *Notes from the Edinburgh Botanic Garden* contains a further instalment of the description of the plants discovered and collected by Mr. George Forrest during his first exploration of Yunnan and Eastern Tibet in the years 1904-6. Plants of the following orders and genera are described in this issue:—New species of Celastraceæ, Pirolaceæ, Cyperaceæ, Lespedeza, Asclepiadaceæ, Orchidaceæ, Geranium and Pedicularis

The Chemistry of Steam-Sterilised Soils.—The interesting and important results which have been obtained by the use of sterilised soils make the investigation of the chemical changes induced in soil by steam sterilisation a matter of practical importance. This subject has been engaging the attention of Messrs. Schreiner and Lethrop, of the United States Bureau of Soils, and the results which have been obtained are published in *Bulletin* 89. The conclusions reached by the authors provide, at least in considerable measure, an explanation of the two-fold effects produced by soil-sterilisation on plant growth. These effects are, first, a delay in germination, and, second, an increased growth of the plants grown on sterilised soil. The check to germination may perhaps be attributed to the fact that a substance, dihydroxystearic acid, usually present in soil, is increased in amount as the result of submitting soil to steam-heat. The subsequent acceleration of growth may in like manner be put down to the fact that steaming soil increases the amount of water-soluble substances, and leads to the formation—among other things—of ammonia. Hence the contradiction between first bad and later good effects is to be explained on the ground that steam heating gives rise to the formation of substances some of which are favourable and others of which are unfavourable to the growth of plants. The problem is, therefore, to discover some treatment whereby only the beneficial substances are produced or some means by which the harmful substances, though formed, may be eliminated.



Fig. 139.—Narcissus St. Olaf: perianth white; corona sulphur yellow.
(R.H.S. Award of Merit, April 15, 1913.
See page 330.

R.H.S. Spring Show at Chelsea.—The Royal Horticultural Society's Spring Show will be held at the Royal Hospital Gardens, Chelsea (nearest station Sloane Square), on the 20th, 21st and 22nd inst., and there is already a promise of a very large attendance. The railway companies and omnibus companies are doing all in their power to facilitate easy access to the Exhibition grounds. Sloane Square Station is but three minutes' walk distant from the Hospital Road entrance to the gardens, and the station being on the District Railway makes it a very simple matter for City men travelling from the Man[illegible]House to visit the show. Luncheon will be served each day, an accommodation not possible at the Temple within the last few years. The large tent is 300 ft. long by 275 ft. wide, built in six spans, representing an area of two acres under canvas. In this tent 84 large groups of flowers, plants, and shrubs, aggregating 21,500 square feet, and a further 95 exhibits on tables, representing 7,500 square feet, will be staged. In the open air no fewer than seventeen large rock gardens, formal and paved gardens, and large groups of flowering shrubs, cut shrubs, and garden ornaments are to be arranged. In all there will be 244 exhibitors and 303 exhibits. At the last Temple Show there were but 126 exhibitors occupying an area of 25,000 square feet of exhibits, as against an aggregate at Chelsea of 73,000 square feet.

Town Smoke and Plant Growth.—We have referred on a former occasion to the interesting observations made by Mr. Charles Crowther on the effects of town smoke on the growth of plants in the neighbourhood of Leeds. The deleterious effects are numerous, but perhaps the worst is that brought about by the reduction in the amount of light which falls upon the earth. We have at present no means of estimating with accuracy the evils which follow from this shutting out of sunlight, but enough is known to enable us to say that it is harmful alike to man and beast and plant. The amount of light prevented from falling on the ground by reason of the smoky atmospheric screen which hangs over our great towns may be 40 per cent. of that which, but for the smoke, would be available.

Royal Society Conversazione.—Among the biological exhibits shown at the Royal Society conversazione on May 7 were a series of botanical photographs taken by Professor H. H. W. Pearson during his recent travels in German South Africa: a series of microscopic

preparations of fossil plants from the Upper Devonian of Kentucky, U.S.A. The specimens were remarkable not only for the excellence with which detailed structure is shown, but also for the fact that all the species which they represent are highly organised land plants.

THE HALF HOLIDAY.—Messrs. Hurst & Son, Houndsditch, beg to give notice that from May 17 until August 30, both dates inclusive, their premises will close on Saturdays at 1 o'clock, instead of 3 o'clock as heretofore.

SEED-TESTING STATION IN IRELAND. — The Department of Agriculture established a seed-testing station about twelve years ago at which farmers in Ireland can obtain information as regards the quality of the seeds they propose to sow at the low cost of 3d. per sample. This station has recently been enlarged and reorganised in order to cope with the increasing demands on its services, and is now housed in the new buildings of the Royal College of Science, Dublin, recently opened by His Majesty the King. An account of this seed-testing station is in the May number of *Irish Gardening*. Further, an Act of Parliament dealing with the sale of agricultural seeds and the prevalence of noxious weeds is in force in Ireland alone of the three kingdoms, the administration of which by the Department of Agriculture is stated to react beneficially on all connected with the agricultural industry.

PERPETUAL-FLOWERING CARNATION SOCIETY. This society has arranged a dinner and entertainment on the 21st inst., the second day of the R.H.S. Chelsea Show, at the Holborn Restaurant. The hon. secretary, Mr. T. A. WESTON, will be glad to hear, on or before May 14, from those who intend to be present.



FIG. 140.—NARCISSUS EVANGELINE: PERIANTH WHITE; CUP PRIMROSE-YELLOW.
(R.H.S. Award of Merit, April 29, 1913.)

INTERNATIONAL ASPECT OF PLANT DISEASES. —At the third Commission of the General Assembly of the International Institute of Agriculture, held at Rome on the 8th inst., and presided over by Sir SIDNEY OLIVIER, the subject of plant diseases was introduced by Signor CUBONI, an Italian delegate. The general opinion was against the extension of such measures as the Phylloxera Convention, and a Sub-Commission was appointed to draw up a resolution representing the international interests involved. The result was a memorandum, drawn up by M. FOEX, which the Commission adopted unanimously. According to the *Times*, the resolutions were as follows:—(1) The General Assembly recommends that the Governments of the countries adhering to the International Institute of Agriculture should, if they have not already done so, create a Government service of phytopathology. (2) Recognising the utility of an international agreement upon the means of preventing the diseases of plants, it is of opinion that the assembling of an international commission of specialists is indispensable; and it expresses a wish that the French Government would be willing to follow up the initiative it has already taken in this question by inviting a meeting of an international commission as soon as possible, during the month of May, 1914, at the latest. (3) It is of opinion that at each General Assembly of the Institute the specialists of the various Governments should meet in a separate Commission to discuss the results of their researches and studies in the diseases of plants. (4) It begs that the countries adhering to the International Institute will at once begin to study the various questions which the International Commission of Phytopathology will have before it, basing their study upon the materials which the International Institute of Agriculture will be able to furnish.

TWO NEW DAFFODILS.

THE two Narcissi St. Olaf and Evangeline illustrated in figs. 139, 140, both belong to the Leedsii section, and both have received Awards of Merit from the Narcissus Committee of the Royal Horticultural Society recently. St. Olaf has a round, large white perianth that is set off by a beautiful, frilled corona, which is pleasingly tinged with sulphur-yellow colour. Evangeline has a less spreading corona of a paler shade, whilst the perianth segments have not the large dimensions characteristic of the variety St. Olaf.

THE ROYAL ACADEMY EXHIBITION.

AT the Royal Academy this year lovers of flowers and country life will find their chief interests centre in the Water-colour Room (No. X.), and before approaching the larger, more important works—popularly known as "pictures of the year"—attention should be directed to many excellent small still-life pictures, brilliant flower-groups and gay—not to say gaudy—garden scenes which, as usual, adorn its screens and walls.

Alfred Parsons, R.A., leads the way with his drawing, "The Garden in May"—which should have been "June" judging by the seasons nowadays. An admirably rendered group of Peonies fills the foreground, their clear-cut petals, pink and white, standing out effectively against the grey-green foliage and summer sky beyond. Peonies are not often painted, but there is no doubt they should prove fine material for the flower-painter. Roses, as a rule, hold their own in any exhibition; but this year blue flowers seem to be first favourites; wild Hyacinths especially. They predominate in many woodland and garden scenes, and on almost every wall we see a view reminiscent of childhood's days in the forest—misty blue vistas under over-arching trees, and Bluebells, Bluebells everywhere. Of these "Hyacinthine" pictures Hugh L. Norris sends one of the most charming. He treats the flowers in broad, impressionistic fashion, balancing their blue between the vivid and pale greens of the year's young foliage. Miss Alice Orde in her sketch brings in more detail. But the Delphinium, in its many shades of the azure tint, runs the

Hyacinth close, and we even have a picture of a Devon garden entitled "The Blue Hydrangea Walk," by Florence Reason. This flower in such profusion out-of-doors is a rarity indeed, except in the Sunny South. Miss M. Dorothy Tolson shows a drawing of one of the most charming of the Delphinium groups, and convinces us that this flower is the supreme achievement of Nature, assisted by the gardener, in its pale cerulean and deeper tints of blue.

There are two garden pictures, interesting for their associations with the poets Shelley and William Morris—the great man who loved beauty in all its forms. G. D. Leslie, R.A., sends "Shelley's Garden, Marlow," and W. J. Stillman is the painter of "Kelmscott Manor" and its quaint old garden, adorned with old English flowers and shrubs which still betray a little of the antique world of far-off days which Morris portrayed in his *Earthly Paradise*. Fred Spencer sends an admirable rendering of a woolly and indefinite in most other methods of painting.

Of drawings interesting for the novelty of their subjects must be mentioned "Near the Thika River, British East Africa," by Bryan Hook. This appears to be a bit of characteristic African scenery enlivened by a native ornithological incident, in which two hooded cranes are the principal actors. It is self-evidently painted on the spot—not a made-up study of birds in the Zoo. A curious tree, with strange pink flowers like bottle brushes, helps the African illusion. Sir Harry A. Johnston also shows a curious study of two rare birds, which he names "The Blue Bird of Paradise." There are also several excellent bird studies by Nathan Vauderlyn, the most remarkable, for its weird sentiment, being "The Dead Daw," a study of a dead bird in its lonely natural surroundings on a cragged hillside. This study exemplifies the value of the atmosphere of the execution, and, indeed, redeem English art from the many sins of the multitude of English daubers and dabblers, who by some ill chance to the public and their own good luck display their vulgar portraits and extravaganzas in paint on the walls of Burlington House. These two pictures show at least that we still have one poet-painter who carries on the high tradition of G. F. Watts, and evolves a soul and mind as well as a body in his art. *Mary L. Breakell.*

FOREIGN CORRESPONDENCE.

FERNS AT THE GHENT SHOW.

I HAVE read your very interesting report of the Ghent International Exhibition, but I do not agree with the statement on p. 296 that "Ferns are not managed so well in Belgium as they are



FIG. 141.—GROUP OF FERNS EXHIBITED BY MESSRS. BIER AND ANKERSMIT AT THE GHENT EXHIBITION.

group of Apples with foliage, which excels in some points the work of "old William Hunt," the master in this genre. There is also an admirable little landscape, "Ploughing," in the feeling of De Wint by Gatton Winter. Miss Edith Barrow, a frequent exhibitor of flowers, sends this year a large bowl of "White Primulas," well and crisply drawn, and washed in fresh, pure colour. But of all the charming and dainty drawings on the screens in the water-colour room—for their sheer artistic skill and delightful feeling—must certainly be sought out the bird studies by George Collins, "The Yellow Hammer" and "The Whitethroat." The first-named is simply perfect in its kind. The small bird, full-throated, [illegible] perched on the tip-top of a branch of flowering yellow Gorse against the blue of the sky, singing as if its little heart must burst for very joy of the springtime. The peculiar technique, the etched outline round the milky flowers of the Gorse, help to give its true character to the plant, which is apt to look true environment in producing the sensation aimed at by the artist.

Now to the oil pictures, of more ambitious proportions! And first of all, see Joseph Farquharson's "Leafy Month of June" on the bank of a river which glides by unseen, but betrayed by the nature of the leafage—huge Burdocks in the foreground, graceful Willows athwart the background, and a sweet little glimpse of a coppice in the distance. Then see "Cattle in a Meadow," a fine broad study by Andrew Douglas, and "An Old-Fashioned Posy," by Jessie Algie, a distinguished Scottish flower-painter. Her work is noted for its strength and richness of colour, enhanced by her certain grasp of the true relations of light and shade in effective grouping.

In conclusion, among several fine works, two comparatively small pictures by Edward Stott, A.R.A., "The Adoration of the Shepherds" and "The Carpenter's Shop," shine forth as really great in the best sense, both in motive and

by the leading English growers." You apparently overlooked the beautiful exhibit of these plants by Messrs. Bier and Ankersmit, of Melle, near Ghent. In the group of Adiantum Glory of Moordrecht every plant was a fine specimen, with splendidly coloured fronds. The jurors awarded the first prize to Messrs. Bier and Ankersmit. I enclose a photograph (see fig. 141) of their group.

It is a pity if English visitors did not visit the nursery where these plants are cultivated, then, no doubt, you would agree with me that the Belgian growers can compete with English cultivators in Fern growing. *J. K. Budde, Curator, Botanic Garden, Utrecht, Holland.*

"AMONG THE HILLS."

HAD the famous alpinist and botanist, John Ball, been living, he would be the first to approve of M. Correvon's ex-

planation of the terms "Col du Mont Iseran," "Col du Mont Cenis," etc., though there are no mountains bearing these names (*Gardeners' Chronicle*, p. 208). If Mr. Reginald Farrer will read further in Ball's *Alpine Guide* (unfortunately my copy is in England, so I cannot give him full details), he will find an interesting account of the history of the fabulous "Mont Iseran." For many years a big mountain of 13,000 feet in the district of the Col du Mont Iseran was believed in, until the late George Matthews, of Birmingham (or was it William the botanist? for he also was a pioneer in the Alps), proved in the 'sixties that no such mountain existed. So sceptical were the French engineers that for many years after Mr. Matthews made his discovery, such a mountain appeared on the Government maps, in guide books, etc. *H. S. Thompson, Var.*

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

Rhododendron pallidum (see pp. 230, 264).—One hesitates to enter into the merits or demerits of the correct name of this plant, about which there seems to be some doubt. This name was proposed (p. 230) by *W. W.* for a plant which was raised at Kew from seeds received from Edinburgh Botanic Gardens under the name of Rhododendron virgatum. When the plants flowered it was clear that they were of hybrid origin, and this plant was undoubtedly one of the parents. The flowers are a delicate blush-white, and the name "pallidum" aptly describes them, and for garden purposes will no doubt be generally accepted. According to Mr. Dümmer (p. 264) this name is untenable and is antedated by Azalea pallida of Turczaninow (Rhododendron pallidum, mihi, comb. nov.). Opinions on this point differ considerably, for with many botanists it does not follow that because a genus is transferred to another—as, for instance, Azalea to Rhododendron—all the species are transferred bodily under the same specific names. I am quite aware of the fact that most botanists adopt this method, but some do not, hence we have in some genera several different plants which have one and the same specific name, and we have also certain plants that are known under several different specific names. Two distinct rules have been followed by botanists in the past in regard to nomenclature, the one claiming that the correct name of a plant is (1) the oldest specific name under any genus, and the others (2) the oldest specific name under the right genus. I cannot do better than quote a well-known writer on this matter: "Those who set up a law of priority are usually the first to break it. Convenience as well as expediency demands that the interest of science should in particular cases override any merely technical claim of priority." In regard to plant names, cases frequently occur in which an old garden plant is afterwards transferred from one genus to another, entailing not only the changing of the generic, but the specific name as well. Many persons under these circumstances positively refuse to accept the new name on the ground of convenience, but others, on the ground of priority, readily accept it, and so we have the plant masquerading under two very different names. If it remained under only two it would not matter so much, but there are cases where a single plant has a dozen or more generic or specific names. In the case of the genus Rhododendron we find that in the *Index Kewensis* no fewer than sixteen other genera are now embodied in it, in some of which we find a duplication of some of the specific names, and there are upwards of 500 published names in the parent genus alone. Whether the name of R. pallidum as applied to the Kew-raised hybrid will be accepted on the ground of convenience or rejected on the ground of priority is a matter of opinion. The amusing part about the whole matter is that your correspondent, Mr. R. A. Dümmer, in attempting to correct *W. W.*, falls into error in regard to the very point in nomenclature which he sets out to put straight in suggesting the name of R. edinense for R. × pallidum, as his name was published in the *Gardeners' Chronicle* over 20 years ago by the selfsame *W. W.* for a hybrid between R. Nuttallii and R. Henryanum. See *Gard. Chron.*, 1892, 2, p. 762. *C. P. Raffill.*

The Fruit Blossom.—I was much interested by the remark of *A Southern Grower* last week on p. 301, column 3. Referring to the blossom on Apple trees, he states: "Some varieties have disappointed expectations raised before the fruit-buds burst, as a large proportion of these buds have developed clusters of leaves only." Perhaps his trees may have been damaged by bullfinches. I have several trees in the gardens here that were well set with fruit-buds, but most of them have been rendered partly or totally blind by a pair of bullfinches. Scaring would not keep them off, and I am sorry to say that I had to destroy them. I have noticed on several occasions that the bullfinch is a bird that is apt to vary its diet and may attack more or less in some seasons the buds on the Gooseberry bushes, flowering shrubs, sweet Cherries, Plum or Apple trees. *G. H. H. W., Hampshire.*

The Market Fruit Garden. — *Southern Grower* enquires (see p. 301) as to the prevalence of Apple suckers on the trees this season. I have not seen a single one, although I hear they are numerous in a large garden but a few miles from this place. Our trees were sprayed with Buxton lime, and in the case of Warner's King, which I have always found the most susceptible to sucker, I used salt with the lime. The spraying was done just before the flower-buds parted from the cluster ready for expansion. This late spraying may have been the cause of the present immunity from the pest. Of aphides or caterpillars I have seen none. The blossom is very strong this season upon all varieties, and the trees look exceptionally well in the foliage. In the case of Cox's Orange Pippin the trees have an abundant flower-crop. We have two or three trees of this variety affected in the manner described by *Southern Grower*. I have several hundred trees of Lord Grosvenor; they are usually thickly covered with blossom, although in some cases trees that give big crops one year have quite a few, or sometimes none, the following year. In this way we have annually plenty of fruit of this variety. Allington Pippin never fails to yield a crop, and generally a heavy one. Golden Spire is not much grown, but the few trees are annual bearers. Lane's Prince Albert promises remarkably well, and so does Beauty of Bath and Lady Sudeley. I do not think I ever saw the latter variety so full of blossom. Certainly I have never seen the former so promising. This variety crops best as a standard. The trees get more extension in their branches, and thus come into bearing earlier. Some trees of Bramley's Seedling that fruited heavily last year are not nearly so full of flower this season. Closely-spurred trees of Warner's King are remarkably well set with flower. I have long since come to the conclusion that newly-planted trees should be cut back the same season of planting. Those planted in November I usually prune in February; a month one way or the other does not make any difference, but they should be cut back the same season. I do not believe in the doctrine some authorities preach of deferred pruning until the next season. We want growth entirely the first year, because the larger the area the trees cover in a short time the better is the fruit prospect later. *South Hants.*

Rhodochiton volubile.—This pretty climber, which you illustrated in the coloured supplement last week, is to all intents and purposes hardy in the south-west of England. I have grown it out-of-doors during several winters. If seeds were sown in the autumn or late summer and the plants were wintered in a frame or greenhouse it would make an ideal climber for any part of England. It would probably do better away from the sea, as it revels in hot sunshine, not that we do not get abundant sunshine here, but that the sea takes a lot of the heat out of it. *I. N. H. Watson, Glenholt, Falmouth.*

Adiantum pedatum.—With reference to Mr. Druery's remarks on Adiantum pedatum on p. 287, I may state that some years ago I was in Illinois, U.S.A., where I found this Fern in woods at Lynnville, near Jacksonville. In some places large patches were growing in dense shade of Oak and Hickory. *Wm. Jolland, Eshton Hall Gardens, Gargrave.*

Batata, or Sweet Potato.—I should be glad to have any information from those of our readers who have attempted the culture of the Sweet Potato in this country. The procedure, I take it, is to start the tubers into growth, and at the proper length these are pulled away from the parent and potted. These when rooted are then transferred to a frame or pit that had been previously half-filled with leaves, to provide a mild bottom heat, a sandy soil, incorporated with leaf-soil or well decayed manure. The plants are then planted in rows and gradually inured to the weather conditions as summer advances. I believe it is necessary to give the plants copious supplies of water during the growing season of about four months. I do not pretend to know anything about the culinary uses of the Sweet Potato, or whether there are any other ways of cooking than that of baking. *Geo. Dyke, Guilsborough Hall Gardens, Northampton.*

Davidia involucrata (see p. 311).—It is, perhaps, worth recording that a tree of Davidia involucrata has flowered in my garden at Bognor, as suggesting a hope that the plant may prove useful as a flowering tree in the open in this country. The tree was planted in 1902, and bore two inflorescences in 1912. No fruit ripened. The tree is not flowering this year, owing, perhaps, to the cold, wet summer and autumn of last year. *W. H. B. Fletcher, Aldwick Manor, Bognor, Sussex.*

SOCIETIES.

ROYAL HORTICULTURAL.

May 14.—In view of next week's Spring Show at Chelsea, it was only to be expected that the fortnightly exhibition in the Society's Hall, Vincent Square, Westminster, on Wednesday last would be below the average. Orchids were very few, the chief floral features being the trade exhibits of May-flowering Tulips, forced Roses and Sweet Peas. There were no exhibits in the competitive classes for May-flowering Tulips.

The Floral Committee awarded 21 Medals, 1 First-Class Certificate, and 7 Awards of Merit. The Narcissus Committee, which also adjudicate on Tulips, bestowed 10 Medals for collections, and 1 Award of Merit.

Floral Committee.

Present: H. B. May, Esq. (in the chair), Messrs. Chas. E. Shea, R. C. R. Nevill, C. T. Druery, G. Reuthe, J. W. Moorman, W. P. Thomson, W. J. Bean, C. R. Fielder, John Green, Chas. Dixon, Chas. E. Pearson, J. F. McLeod, Wm. Howe, Thos. Stevenson, Wm. J. James, Arthur Turner, George Paul, Jas. Hudson, John Jennings, George Gordon, W. A. Bilney, E. H. Jenkins, W. B. Cranfield, and Capt. A. A. Dorrien-Smith.

Messrs. James Veitch & Sons, Chelsea, filled a length of tabling with a comprehensive collection of scented-leaved Pelargoniums, which was brightened by standard plants of Streptosolen Jamesonii. In another place Messrs. Veitch showed Alpine and Show Auriculas. (Silver Flora Medal.)

Messrs. H. B. May & Sons, Upper Edmonton, displayed well-grown plants of Verbena, Heliotrope, Salvia splendens and Violas and a collection of stove and greenhouse Ferns. (Silver Banksian Medal.)

Col. Lockwood, C.V.O., M.P., Bishop Hall, Romford, Essex (gr. Mr. G. Cradduck), contri-

buted an excellent group of Schizanthus Rosy Gem. (Bronze Flora Medal.)

Mr. Philip Ladds, Swanley Junction, showed floriferous plants of Hydrangeas, fancy Pelargoniums, Stocks, Heliotropes, and other flowering plants. (Silver Banksian Medal.)

Mr. Charles Turner, Slough, exhibited well-grown Caladiums, for which a Silver Banksian Medal was awarded.

Messrs. Wm. Cutbush & Son, Highgate, London, displayed Carnations, various hardy plants and shrubs, and a group of beautiful Polyantha Roses. (Silver-gilt Banksian Medal.)

Messrs. Stuart Low & Co., Bush Hill Park, Enfield, exhibited a large collection of Carnations. (Silver Banksian Medal.)

Messrs. W. Wells & Co., Ltd., Merstham, and Mr. C. Engelmann, Saffron Walden (Silver Banksian Medal) also exhibited Carnations.

Messrs. George Mount & Sons, Canterbury, showed a collection of excellent cut Roses of such varieties as Mrs. John Laing, Mrs. R. G. S. Crawford, Richmond, and Ulrich Brunner. (Silver-gilt Flora Medal.)

Messrs. B. R. Cant & Sons, Colchester, showed a fresh collection of cut Roses in which large floriferous branches of the Austrian Briars were conspicuous. (Silver Banksian Medal.)

Mr. Elisha J. Hicks, Hurst, Berks, also showed Roses.

Messrs. Dobbie & Co., Edinburgh, exhibited wonderfully fine Sweet Peas; of the 30 or more varieties several were unnamed, but all were of splendid quality. Besides the Sweet Peas Messrs. Dobbie showed Dahlias, Violas, Pansies and Tulips. (Silver-gilt Flora Medal.)

Mr. G. Reuthe, Keston, Kent, arranged an interesting collection of uncommon Shrubs, Alpines and Tulips. (Silver Flora Medal.)

Mr. G. W. Miller, Clarkson Nurseries, Wisbech, displayed Violas and Pansies, and varieties of double-flowered Daisies.

Messrs. Carter Page & Co., London Wall, London, showed a small collection of Cactus; Collerette and decorative Dahlias; various border flowers and many Violas. (Bronze Banksian Medal.)

Messrs. Whitelegg & Page, Chislehurst, Kent, also exhibited bedding Violas. (Bronze Banksian Medal.)

Messrs. Reamsbottom & Co., Geashill, King's County, again exhibited an astonishingly fine collection of double St. Brigid Anemones. (Bronze Flora Medal.)

Mrs. Lloyd Edwards, Bryn Oerog, Llangollen, showed a good collection of Saxifrages. (Silver Flora Medal.)

Messrs. G. Paul & Son, The Old Nurseries, Cheshunt, exhibited an interesting collection of cut sprays of hardy shrubs. (Silver Banksian Medal.)

Hardy border flowers were shown by Messrs. G. & A. Clark, Dover.

Messrs. Goos & Koenemann, Nieder-Walluf, Reingau, Germany, showed several good varieties of Iris interregna.

Rockery exhibits were made by Messrs. Baker's, Wolverhampton, Messrs. Wm. Fells & Son, Hitchin, who had a good batch of Daphne Cneorum (Bronze Flora Medal). Mr. H. Hemsley, Crawley (Silver Banksian Medal), Messrs. W. T. Ware, Ltd., Feltham, The Misses Hopkins, Shepperton-on-Thames, The Wargrave Plant Farm, Liverpool Street, London (Bronze Flora Medal), and Messrs. J. Cheal & Sons, Crawley (Bronze Flora Medal).

W. Van de Weyer, Esq., Smedmore House, Corfe Castle, Dorset, exhibited a small collection of South African plants, including the plant of Thunbergia Gibsonii, which received an Award of Merit.

The Clarence Elliott Trophy, offered for an exhibit of rock-garden plants, was won by Sir Everard Hambro, K.C.V.O., Hayes Place, Hayes, Kent (gr. Mr. J. Grandfield), with a very formal arrangement which contained exceedingly fine plants. Those in flower included Lewisia Howellii, L. Cotyledon, Asperula suberosa Athoa, Helichrysum bellidioides, Silene Hookeri, Haberlea virginalis and Oxalis enneaphylla rosea. Capt. G. G. Traherne, Muirburn, Strathaven, N.B., who also competed, arranged good plants of Gentiana acaulis, Iris cristata, Ranunculus amplexicaulis, etc., in a better-designed rockery, but the variety of plants was not so good.

AWARDS.

First-Class Certificate.

Paeony "La Lorraine."—A magnificent Moutan or tree Pæony with soft yellow flowers touched lightly with red and buff at the centre; the bloom is very globular, full and double, being some 6 inches in diameter. Shown by Messrs. Pipers, Bayswater.

Awards of Merit.

Rhododendron Wightii.—Flowers creamy-yellow with a touch of crimson at the base; of a rounded bell shape, held loosely in a large truss of nearly 20 flowers. The individual blooms are on rather long, sticky pedicels, and the bud bracts are persistent, and rusty with tomentum. Leaves about 6 by 2 inches, leathery, wrinkled slightly above and densely covered with rusty tomentum below. Only one truss was shown, and the species is extremely rare in cultivation. The award was made by the Council, and not by the Floral Committee.

Rhododendron Rose Queen.—Flowers pink, flushed outside with rose and touched with orange at the bottom of the tube, in a loose truss of some eight flowers. They are funnel-shaped, expanded at the throat, of a very beautiful waxy texture, and as much as 3 inches in length and diameter. R. Maddenii may have given the flower its form and size, and the leaves appeared to have some of the characteristic scales of that species. Both shown by Miss Clara Mangles, Littleworth, Seale.

Aster Purdomii.—An Alpine species collected by Mr. Purdom for Messrs. James Veitch and Sons in the mountains of Tai pei Shan, Shensi. The flowers are violet-mauve, with small, pale-yellow disc, on unbranched, slender, hairy stems 9 inches high. The flowers vary from 1¼ inches in diameter to over 2 inches, and have from 30 to 50 narrow ray florets. The lower leaves are ovate or ovate-lanceolate, with a few distant marginal teeth, and distinctly stalked. The few stem leaves are sessile, lanceolate to oblong, and more or less entire. Shown by Messrs. James Veitch & Sons.

Rose "Miss Flora Mitten."—A semi-perpetual rambler derived from R. Brunonianum, crossed perhaps with R. canina. The flowers are single, of Dog-Rose pink, with white centre enlivened by a mass of yellow stamens, and 3½ to 4 inches in diameter. The opening buds are globular, and the five large petals are broad, overlapping and notched in the middle. As shown, the trusses carried about a dozen flowers, but in the open the main truss is said to develop as many as 25 blooms. Shown by Mr. J. Elliott, Hassocks.

Thunbergia Gibsonii.—A pot plant of this species was shown with the growths tied to a flat horizontal wire frame extending from the level of the top of the pot. The flowers are clear orange colour, about 1¼ inches in diameter. They rise solitary from the leaf axils of the prostrate growths on erect 3-inch purplish pedicels, and burst through one side of the balloon-like paired and united crimson-stained bracts. The leaves are opposite, about an inch long, triangular, firm-textured, and glossy above. Introduced from British East Africa and shown by W. Van de Weyer, Esq., Corfe Castle.

Carnation "Lady Shrewsbury."—A Perpetual-flowering variety, with large, full flowers, slightly clove-scented, of a pale salmon-pink colour. The petal edge is almost smooth, the calyx stout, and the habit of pot plants free-flowering and vigorous. Shown by Messrs. W. Cutbush & Son.

Heliotrope The Speaker.—This is a vigorous, pale-violet, white-eyed seedling, closely resembling Lord Roberts in colour, but perhaps a shade paler. Its value lies in its great vigour. The plant branches freely after being only once stopped, has bold foliage, and throws enormous trusses. Shown by Mr. Ladds.

Narcissus and Tulip Committee.

Present: E. A. Bowles, Esq. (in the chair), J. T. Bennett-Poë, W. B. Cranfield, Walter T. Ware, Francis Barnard, Christopher Bourne, H. V. Warrender, W. W. Fowler, Joseph Jacob, Herbert Smith, J. D. Pearson, and G. W. Leak.

Messrs. Sutton & Sons, Reading, displayed a large group of Tulips "grown under ordinary culture" at their Reading trial grounds, which illustrated the great decorative value of the May-flowering varieties. (Silver-gilt Flora Medal.)

Messrs. Hogg & Robertson, Dublin, included such Tulips as Queen Alexandra, Millet, Henner, Emin Pasha, and Mrs. Moon in their collection of May-flowering varieties. (Silver-gilt Flora Medal.)

Messrs. Carter & Co., Raynes Park, London, exhibited vases of gorgeous Darwin, cottage, and Pluriflores Tulips. Of the Darwins, Europe, Prof. Rauwenhoff, Nauticus, and Pride of Haarlem were especially noteworthy. (Silver-gilt Flora Medal.)

Messrs. R. H. Bath, Ltd., Wisbech, included many flaked Tulips in a very showy collection of these flowers. (Silver-gilt Banksian Medal.)

Messrs. R. & G. Cuthbert, Southgate, Middlesex, showed an excellent collection of Tulips. Beside the fine Darwins, there were vases of T. gesneriana spathulata, Zomerschoon, and Mrs. Moon of more than average merit. (Silver Flora Medal.)

Messrs. R. Wallace & Co., Colchester, showed a wide range of May-flowering Tulips and Irises. (Silver Flora Medal.)

Mr. C. Bourne, Simpson, Bletchley, contributed a smaller collection of fine Darwin and cottage Tulips. (Silver Banksian Medal.)

Messrs. Barr & Sons, Covent Garden, London, arranged a bank of Tulips in great variety. Of the Darwins, Whistler, Inglescombe Yellow, King Harold, and Flamingo were very striking, as also were several gesneriana varieties. (Silver gilt Banksian Medal.)

Mr. W. A. Watts, St. Asaph, North Wales, effectively massed a large number of Darwin Tulips in one corner of the hall. (Silver-gilt Banksian Medal.)

Messrs. James Veitch & Sons, Chelsea, displayed a very bright collection of Tulips, for which a Silver Banksian Medal was awarded.

Award of Merit.

Tulip "Massenet" (*Darwin*).—The only redeeming feature of this variety is the strong, erect flower stalks. The shape of the flowers is poor, and their colour an inharmonious combination of creamy-yellow and pale purple. Shown by Messrs. R. H. Bath, Ltd.

Orchid Committee.

Present: J. Gurney Fowler, Esq., in the chair, and Messrs. Jas. O'Brien (hon. sec.), Gurney Wilson, A. McBean, R. A. Rolfe, Walter Cobb, J. Cypher, H. G. Alexander, A. Dye, W. H. White, S. W. Flory, and Sir Harry J. Veitch.

Sir Trevor Lawrence, Bart., Burford (gr. Mr. W. H. White), staged a selection of rare Orchids that were grown splendidly. They included Odontoglossum crispum, Oakfield Sunrise, O. c. Rossendale, O. c. purpurascens, Lælio-Cattleya Fascinator, the beautiful L.C. Fascinator-Mossiæ, and others. Two interesting plants were Dendrobium thyrsiflorum Galliceanum, figured in *Lindenia* as D. Galliceanum, an interesting case of fixed abnormality, the imperfect sheli-shaped lip retaining its peculiarity, and the form of Cochlioda sanguinea, once recorded as C. stricta; also a fine specimen of Brasso-Cattleya nivalis, for which a Cultural Commendation was given.

Sir Geo. H. Kenrick, Whetstone, Edgbaston, Birmingham (gr. Mr. Macdonald), was awarded a Silver Flora Medal and Cultural Commendation for a dozen fine plants of Dendrobium Dalhousieanum 4 to 5 feet high, and bearing each three to four spikes. These and others were derived from one original plant, the original pseudo-bulbs being still visible.

The Liverpool Horticultural Company, Gateacre, Liverpool (Mr. John Cowan, manager), staged an interesting group of their pretty hybrid Lælio-Cattleya Cowanii, with yellow flowers, having deep purple lips, some forms being tinged with copper-red; also hybrids of Lælia cinnabrosa, L.-C. highburiensis, L.-C. elegans varieties, and a plant of the pretty Cypripedium bellatulum Queen of Spain, white, with soft rose-pink spotting.

W. R. Lee, Esq., Plumpton Hall, Heywood, showed Odontoglossum Pavlova of unrecorded parentage, and a specimen of Dendobrium Falconeri, with 200 flowers, for which a Cultural Commendation was awarded.

The Right Honble. Lord Lawrence, Chetwode Manor, Buckingham, showed a noble speci-

men of Dendrobium Dalhousieanum. The tallest growth was 6 feet 7 inches high. The specimen bore many fine racemes of large cream-white flowers, with maroon blotches on the labellums. Mr. C. J. Salter, the gardener, was awarded a Cultural Commendation.

Pantia Ralli, Esq., Ashtead Park, Surrey, showed Odontioda Sanderæ, a finely-formed flower of a uniform deep red colour.

Messrs. J. & A. McBean, Cooksbridge, sent Odontioda Lambeauana Excelsior, a large flower of perfect shape, deep red, with white ground colour showing in the lip.

Alwyn Harrison, Esq., Lyndhurst, Watford, showed Odontoglossum Ianthe, Harrison's variety, an evenly spotted form, and Lælio-Cattleya Elsie Lemare, an attractive hybrid.

Mr. R. A. Rolfe showed flowers from crosses made at Kew, and proving the records of the imported natural hybrids—viz., Odontoglossum Coradinei (Lindleyanum × crispum) and Lælio-Cattleya amanda (L. Boothiana × C. intermedia).

Awards of Merit.

Brasso-Laelio-Cattleya Veitchii, The Dell variety (*B.-C. Digbyano-Mossiae* × *L. purpurata*), from Baron Bruno Schroder, The Dell, Englefield Green (gr. Mr. J. E. Shill).—A most beautiful and finely-formed flower, with silver-white sepals and petals tinged with rose, and broad, deep rose-purple lip with yellow disc, the fringed margin shading to rosy-lilac. The base of the lip was dark red with white lines.

Laelio-Cattleya Fascinator-Mossiae Burford variety (*L.-C. Fascinator* × *C. Mossiae*), from Sir Trevor Lawrence, Bart., Burford (gr. Mr. W. H. White).—A noble flower of fine proportions, all the parts being broad and well displayed. The sepals and petals are clear blush-white, the front of the lip violet-purple, with a light margin.

Odontoglossum Phoebe splendens (*cirrhosum* × *crispum blotched variety*) from Messrs. J. and A. McBean, Cooksbridge. — A remarkable flower, very widely separated from ordinary forms, and telling of the excellence of the Cooksbridge strain obtained by using a fine blotched O. crispum. The flowers are as large as those of a good O. crispum; the white, tinged on the backs of the sepals with purple, and both sepals and petals having large maroon blotches. The O. cirrhosum, however, appears slightly in the lip and apiculate termination of the sepals.

Botanical Certificate.

Lissochilus streptopetalus, from William Van de Weyer, Esq., Smedmore House, Corfe Castle.—The specimen was collected in British East Africa in the N'gongo Hills, alt. 8.300 feet, thirty miles or so from Nairobi. It is widely distributed in East Africa, and is closely related to L. Krebsii. The plant bore eight fine spikes of yellow flowers with greenish sepals striped with brown, the showy faces of the petals being reversed. The plant is figured and is commonly known as Eulophia streptopetala, but it naturally falls into the allied genus Lissochilus.

Fruit and Vegetable Committee.

Present: Jos. Cheal, Esq. (in the chair), Messrs. C. G. A. Nix, A. W. Metcalfe, A. Bullock, J. Davis, and A. R. Allan.

The only exhibit before the Committee was a dish of Nectarine Early Rivers, sent by W. Arkwright, Esq., Sutton Hall, Chesterfield (gr. Mr. Jas. Stephenson), which evidenced high culture, but unfortunately were much bruised in transit.

Scientific Committee.

April 29, 1913.—*Present:* Mr. A. W. Hill, M.A. (in the chair), Messrs. J. T. Bennett-Poë, W. Hales, E. M. Holmes, A. W. Sutton, and F. J. Chittenden (hon. sec.). (Visitor), Sir Arthur Hort.

Scilla campanulata.—Mr. A. Worsley showed flowers of a Scilla approaching S. campanulata in form, to draw attention to the colour of seedlings of the pink form of that species which appeared in his garden after the introduction of some white ones among the blue. About one-third of the seedlings produced white flowers, rather less than one-third pink or purplish-pink, and rather over one-third blue flowers. It was not stated whether the flowers were self-pollinated or whether promiscuous crossing had occurred.

Effect of frost on Narcissus.—Mr. J. T. Bennett-Poe exhibited a flower of Narcissus "Green-Eye," to show the influence of frost, which had caused the perianth pieces to remain undeveloped, and to wither partially, while the corona remained unaffected.

Narcissus: Variation in Wild Forms.—Sir Arthur Hort showed a number of forms of Daffodils gathered in the Pyrenees, exhibiting remarkable variation in colour and size. They mostly occurred in rich pastures, and among them were bi-coloured and self-coloured forms, as well as considerable variety in the breadth of the perianth segments, and in the form and shape of the corona.

Anthurium × *conchiflorum.*—A hybrid Anthurium, bearing the name of A. × conchiflorum was shown from the garden of Sir Trevor Lawrence, Bart. It was raised by Mr. Bain by crossing A. Chamberlainianum with A. Scherzerianum. The leaves were long stalked, with blade (about 14 inches by 6 inches), cordate at the base and acuminate; the inflorescence differed markedly from that of A. Scherzerianum in the breadth of the scarlet spathe, which in some instances measured 4½ inches in diameter by nearly the same in length, and in the curious hoodling at the somewhat cordate base of the spathe. The spathe was glossy outside and dull within.

Polyanthus and Daisy abnormal.—Mr. T. H. Dipnall sent an inflorescence of a Polyanthus with a second umbel superposed upon the first, and a Daisy without ray florets.

NATIONAL AURICULA AND PRIMULA.

(MIDLAND SECTION.)

April 30, May 1.—The fourteenth annual show held at the Botanical Gardens, Edgbaston, on the above dates was a great success. The number of exhibitors showed an increase from that of last year, and as the weather was fine on both days the attendance of subscribers and the public was a record one.

The opening ceremony was performed by the Lord Mayor of Birmingham, who was accompanied by the Lady Mayoress. Alpine Auriculas were splendidly shown, but the show varieties were not quite so good, there being a tendency to roughness in many of the flowers.

Show Auriculas.

The first prize for eight varieties of Show Auriculas was awarded to W. M. Shipman, Esq., Altrincham, who had sturdy, well-flowered plants of Cleveley Red, Orpheus, Prince Charming, George Lightbody, Shirley Hibberd, Molly Shipman, Peggy Gibson and seedling Dauntless.

In the second prize collection, which was shown by C. Winn, Esq., Selly Hill, Birmingham (gr. Mr. T. T. Sheppard), George Lightbody (premier grey-edged variety), Marmion, Harrison Weir, Eucharis and Mrs. Henwood were of superior merit.

In a class for six varieties the last-named exhibitor was placed first with strong-stemmed, shapely flowers of Harrison Weir, Mrs. Henwood, Eucharis, Favourite, Henry Wilson and Olympus. 2nd, Mr. W. M. Shipman, whose best varieties were Orpheus, Queen of Spain, and a very promising unnamed green-edged seedling

The best of nine exhibits in a class for four varieties came from Mr. G. Savory, Birmingham, who showed grand plants of Shirley Hibberd, Abraham Barker, Marmion and Acme. 2nd, Mr. C. Reeves, Handsworth, whose best specimens were Mrs. Potts and Acme.

Mr. J. Freeman, Sparkhill, had the best pair of varieties dissimilar in Mrs. Henwood and Henry Wilson. Second, Mr. A. J. Wadley, Aston Manor, who showed Mikado (self) and Ossian (green-edged).

Mr. C. Winn beat nine contestants in a class for three varieties, reserved for local growers. Mr. Winn was also awarded first prizes for (1) grey-edged variety (Marmion), (2) white-edged variety (Eucharist) and (3) self, yellow, primrose, orange or buff variety (Daffodil).

Mr. W. M. Shipman had the winning green-edged variety (Shirley Hibberd), and Mr. C. S. Yeomans, Hollywood, beat thirty exhibitors in a class for self varieties. He had an exquisite specimen of Mrs. Phillips.

Mr. George Barker, Sheffield, was the most successful maiden grower.

Alpine Auriculas.

Competition was excellent in the classes for Alpine Auriculas. The first and second prizes in a class for eight varieties were won by Mr. W. M. Shipman and Mr. C. Winn respectively. The first-named exhibitor had handsome specimens of Majestic, Roxburgh, Charmer, Phyllis, Seedling, Mrs. R. C. Cartwright, Commander and Sunrise. Mr. Winn's best varieties were Majestic (premier gold centre), Mrs. Douglas, Phyllis Douglas, Prime Minister and Muriel.

Mr. Richard Holding, Bournville, excelled in a class for six varieties with superb examples of Argus, J. F. Kew (sport), Unexpected, Violet Vanbrugh, Majestic, and Miss Baker. Second, Mr. W. M. Shipman, whose specimens of Unexpected and Phyllis were very good.

The best of ten exhibits in a class for four varieties came from Mr. H. W. Miller, Handsworth, who had remarkably good examples of Majestic, Blue Peter, Prime Minister and Annie Crisp; 2nd, Mr. W. C. G. Ludford, Four Oaks. Oaks.

Seedlings.

In four of the five classes reserved for seedling Show Auriculas Mr. W. M. Shipman was awarded first prizes for (1) two varieties, (2) one green-edged variety, (3) grey-edged variety, and (4) white-edged variety.

Mr. J. Freeman had the best self Auricula.

The last-named exhibitor won the first prize in a class for two Seedling Alpine varieties with Fred Freeman and Esther, and in another class for one gold-centred variety with an unnamed seedling. The best light-centred Alpine variety was Annie Crisp, exhibited by Mr. H. W. Miller.

The winning exhibit of four varieties came from Mr. W. M. Shipman.

Premier Blooms.

Show Auricula George Lightbody (grey-edged), shown by Mr. C. Winn. Alpine Auricula Majestic (gold-centre), shown by Mr. C. Winn. Seedling show Auricula Modesty (white-edged), shown by Mr. W. M. Shipman. Seedling Alpine Auricula Fred Freeman (light centre), shown by Mr. J. Freeman.

First-Class Certificates.

Alpine Auricula *Doris Hill* (light centre), shown by Mr. T. M. Eglinton, Birchfields. Alpine Auricula *Fred Freeman* (light centre), shown by Mr. J. Freeman. Alpine Auricula *Esther* (gold centre), shown by Mr. J. Freeman. Show self Auricula *Will Freeman*, shown by Mr. J. Freeman. Show Auricula *Modesty* (white-edged), shown by Mr. W. M. Shipman. *Primula pulverulenta* "*Lapworth Flesh*," shown by Lapworth Nurseries, Warwickshire.

Highly Commended.

Alpine Auricula *Mrs. Saunders* (gold-centre), shown by Mr. J. Freeman.

Alpine Auricula *Annie Crisp* (gold-centre), shown by Mr. H. W. Miller. Show Auricula *Angler* (green-edged), shown by Mr. C. Reeves.

Special Medal Awards.

The Silver and Bronze Medals offered by the Birmingham Botanical and Horticultural Society to the most successful exhibitors were won by Mr. C. Winn and Mr. W. M. Shipman respectively.

The two Silver Medals provided by Mr. W. C. G. Ludford were won by Mr. C. Winn, who also gained a Silver Medal offered by Mr. W. H. Parton for show Auriculas. A second Silver Medal offered by Mr. Parton for Alpine Auriculas was won by Mr. W. M. Shipman.

BRITISH GARDENERS' ASSOCIATION.

Annual Meeting at Birmingham.

May 12.—For the first time in the history of the Association the annual general meeting was held in the provinces. The meeting at Birmingham on the 12th inst. was very successful and the series of functions arranged in connection with it were well attended. On Saturday, the 10th inst., by invitation of Messrs. Cadbury, seventy of the members visited and inspected the gardens and pleasure grounds at Bournville.

On Sunday afternoon a party of sixty-five members and friends visited the gardens of Warwick Castle.

The annual meeting was held in the Colonnade Hotel, Mr. Thos. Winter presiding.

Extracts from the Report.

The financial statement shows a balance of £155 9s. 5½d. Considering the heavy expenditure during the year this may be considered satisfactory. Much of this expenditure will not be incurred during the present year. The total receipts were £373 9s. 9d., and the expenditure was £460 2s. 9½d. The meeting will be asked to consider a motion that the entrance fee for new members reduced to 1s., and that the annual subscription shall be 4s. This would bring in an increased amount in subscriptions. The assets of the Association are estimated at £151, whilst the liabilities are nil.

The aim of the executive this year has been, not to endeavour to obtain a big bank balance, but to spend money wisely upon the work of laying a foundation for the future which will be solid and enduring. We estimate that the expenditure for the ensuing year will amount to about £400, and that the receipts will be in excess of the expenditure.

New Members.—During the year the executive, as an experiment, adopted the idea of electing new members on the payment of the registration fee only, the first year's subscription to be paid as soon after election as possible. This system involves more labour, and a simplified scheme is to be put before you for consideration. The new members elected during the year number 335. The present total of members is 1,850.

The third examination took place on April 9, 1913, and for the first time two separate papers were issued, one for seniors and one for juniors. Eleven senior candidates entered for the examination, and five juniors.

Eight new branches have been opened during the year, and the total number is now seventeen. The new branches opened are Cardiff, Colwyn Bay, Edinburgh, Kew and district, Oxton, Swansea, Watford and St. Albans.

Forty-five situations have been filled through the agency of the Employment Bureau. During the year the executive council was asked to endeavour to obtain for the Kew gardeners a revision of the hours worked at Kew. After careful thought a scheme was drawn up and submitted to the President of the Board of Agriculture. The scheme is now under consideration by the Board, and a favourable decision is hoped for.

A deputation of L.C.C. gardeners met the executive on February 5, and it was decided to endeavour to obtain for the L.C.C. gardeners the removal of definite grievances. The executive is determined to do its best to raise the status of the parks gardeners, not only in London, but throughout the country.

Early in the year a new committee was formed to deal with pressing matters of importance. For purposes of economy the editorship of the Journal was handed over to the general secretary in January.

The expenditure incurred in legal cases has not been large, but good work has been done. Three cases have been dealt with by Mr. Garnett, who succeeded in obtaining for the respective members the amount claimed as wages due in lieu of notice. In ten instances a letter from the general secretary has resulted in members' grievances being redressed without resort to legal action. Five applications for legal help were refused after careful enquiries into the actual facts regarding the applications.

Several members have been able to obtain the concession of a Saturday half-holiday in the gardens under their control. The question of the Saturday half holiday will be seriously considered by the executive.

The Chairman referred to the excellent progress made by the Association during the past year. He said that eight new branches had been opened in 1912 and 335 new members elected, whilst several members had received legal assistance. Mr. W. B. Child seconded the adoption of the report, and after discussion the report and financial statement was adopted with a slight amendment. After a ballot Messrs. W. H. Aggett, W. H. Jenkins, Thos. Bevan, A. Clements and H. Curtis were elected members of the Executive Council. Mr. E. P. Cooper, London, was elected treasurer in place of Mr. Thos. Winter, who retires. On a matter of urgency it was decided that in future the accounts of the Association should be audited by a chartered accountant, and Mr. R. A. Witty was elected auditor.

The Executive Council's recommendation, "That the entrance fee be reduced to 1s. and the annual subscription be 4s., inclusive of the *Journal*, and payable if desired in two half-yearly payments of 2s. each," was carried by a large majority. The question of payment of members of the Executive Council was held over until the Association can bear the expense. The Swansea resolution that the office of president be filled by election at the annual general meeting from the members of the Association was negatived, and the Council's amendment, "That five vice-presidents be elected annually from the membership of the Association, that they be eligible for re-election, and that they be ex-officio members of the Council," was duly carried.

The resolution of the Altrincham branch, "That branches be empowered to accept patrons at a minimum subscription of 10s. 6d. per annum," was carried.

The Swansea branch moved that "The time has arrived for the Association to declare itself a trade union, and that a poll of the whole of the members be taken on the question," but the proposal was defeated.

Mr. W. H. Morland (Edinburgh) proposed that candidates for membership, proposed and seconded by branch members and known and agreed to by a branch, need not necessarily submit copies of testimonials on the original form, but shall be provided with a special branch "Application for membership" form. This was seconded and carried *nem. con.*

Delegates from the London branch submitted the following resolution: "That a circular asking candidates for Parliamentary, L.C.C. and Borough Council elections whether they are in favour of improved conditions for gardeners, be printed and sent out as widely as possible whenever the occasion arises, the replies received to be published in the *Journal* previous to elections if possible." The proposition was carried unanimously.

The following are other propositions that were adopted:—

(1) "That foreign gardeners employed in the United Kingdom shall be eligible for membership on payment of the annual subscription only, provided they belong to an affiliated foreign gardeners' association." (2) "The Executive to make endeavours to have gardeners withdrawn from the classification of domestic servants."

Rule 42 was altered to read as follows:—"The general secretary shall keep the names of all members of the Association, and when and where they were admitted or readmitted, with a statement of their ages, whether they were married or single and their qualifications. If any member be transferred from one branch to another the general secretary shall enter a memorandum thereof, and he shall remove therefrom the names of members leaving the Association. These particulars shall be open for inspection at all reasonable times to any member of the Association upon his giving twenty-four hours' notice."

Rule 8.—To delete remainder of rule after the word "year."

Rule 21.—To delete the words after "audited."

It was decided that a list of the names and addresses of the members of the Association, the addresses of the branches, and the names and postal addresses of the branch secretaries, be published triennially.

Messrs. T. Winter, E. F. Hawes, W. H. Divers, W. W. Pettigrew and W. Watson were unanimously elected Vice-Presidents of the Association.

Annual Dinner.

On the evening of May 12 a dinner was held at the Colonnade Hotel, presided over by the Bishop of Birmingham, Dr. Russel Wakefield. Upwards of seventy members and friends were present. The Chairman, in proposing the toast of the British Gardeners' Association, said he did not believe there was any profession in the whole world which had greater advantages in some senses, or was a more skilled and honourable occupation, than gardening. It was remarkable how little people understood the amount of skill necessary for the person working upon the land and coming into direct contact with Nature. The work of the gardener was most varied, and no occupation was deserving of being called more skilled. It was a great thing to have such an Association as the "B.G.A.," which should eventually secure proper recognition of the gardener's true value.

The Next Annual Meeting.

It was decided to hold the next annual general meeting in Manchester during the third week in July, 1914.

LINNEAN.

May 1.—A paper, by Prof. Percy Groom and Mr. W. Rushton, was entitled "The Structure of the Wood of East Indian Species of Pinus," which was read by Prof. Groom. It consisted in an account of the structure of the secondary wood of the five Indian species of Pinus. The following points of more general interest were mentioned. In P. Khasya and P. Merkusii there occur radial bundles of bent tracheides having bordered pits on all their walls. In P. Merkusii the pits on the radial walls of the normal spring-tracheids are often triseriate but typically abietinean in form and arrangement; but often they are grouped together in "nests" of three or four, forming patterns like those in the fossil Cedroxylon transiens, W. Gothan, which, in addition, showed typical araucarian pitting. According to Sanio one or more bordered pits arise in a "primordial pit-area," and frequently the pits do not occupy the whole area; the authors, relying on Sanio, point out that the band-like markings fringing individual pits in uniseriate type, or pairs, or threes, or groups of pits in the other species of Pinus, represent the persistent margins of the original primordial pit-area; hence they term these bands "Sanio's rims."

Where a Sanio's rim occurs the structure of the wall is peculiar; the middle lamella is pectic and not perceptibly lignified; the remaining part of the wall is lignified. Elsewhere the middle lamella does not stain so deeply or typically with pectin reagents, but does stain with phloroglucin and hydrochloric acid. These "Sanio's rims" are the structures termed by Miss Gerry "Sanio's bars," and are not composed of cellulose as she alleges. The term "Sanio's bars" was invented by C. Müller, and he defined them as rod-like structures crossing the lumina of tracheides or constituents of the phloëm, which are lignified in the xylem but not so in the phloëm.

C. Müller made the generalisation that "Sanio's bars" occur in all subdivisions of the Coniferæ, including Araucariaceæ and Taxaceæ, also in Ginkgo.

SHROPSHIRE HORTICULTURAL.

May 2.—The annual meeting of this society was held at Shrewsbury on this date. Mr. W. E. Litt, chairman of the Committee, presided. The balance-sheet for the year was presented, showing total receipts amounting to £5,039 5s. 4d., and this sum was almost equalled by the expenditure, the surplus reaching only £288 2s. 2d. Having regard to this fact, and the loss sustained the previous year owing to the railway strike, the Committee considered it advisable to abandon the spring show this year, which invariably entails a loss of £100. It is not intended, however, to abandon the spring show altogether, and it is hoped to hold the show next year. The subscriptions for the year, £617, constituted a record. The Committee recorded their regret at the retirement of Messrs. H. W. Adnitt and W. W. Naunton as joint hon. secretaries of the Society, in which capacities they had served for 38 years with marked ability. They looked forward with confidence to receiving valuable and efficient services from the new secretary, Mr. W. G. Brazier, who for 25 years had been in close touch with the secretarial work of the Society.

SCOTTISH HORTICULTURAL.

May 6.—The monthly meeting of this Association was held at 5, St. Andrew Square, Edinburgh, on the 6th inst. Mr. King, the president, was in the chair, and there was an attendance of 85 members.

The evening was an open one, and questions relating to the production of young Potatos at Christmas from tubers which had not been allowed to sprout (of which authenticated cases were given; the production of blue colour in the flowers of Hydrangea, the question, What is a hardy exotic plant? as defined in flower show schedules, and questions relating to the cultivation of the soil, fruit-growing, and other matters were discussed.

The following exhibits were staged at this meeting:—New Aubrietias, by Mr. F. Baillie, Liberton; Calceolarias, Sweet Peas and Collerette Dahlias, by Messrs. Dobbie & Co., Edinburgh; new Auriculas, by Mr. John Fraser, The Old Manse, Inverkeithing; Deutzia crenata magnifica, and D. crenata latiflora by Mr. A. Porter, Davidsons Mains; and Vegetables and new Strawberry "Liberal," by Mr. James Scarlett, Sweethope. Messrs. Dobbie & Co., Mr. Porter and Mr. Scarlett were awarded Cultural Certificates for their exhibits.

At the meeting on June 3, Mr. R. K. Brown, Dunnikier Gardens, Kirkcaldy, will read a paper on "Soil Knowledge."

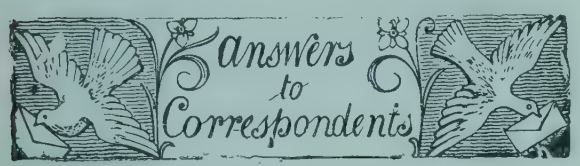
Obituary.

Charles Kay.—We regret to record the death, on the 6th inst., of Mr. Charles Kay, of Mill Farm, Gargunnock, Stirlingshire. Although a farmer, Mr. Kay engaged in the cultivation of Pansies and Violas, which he grew with remarkable success, and he raised many fine varieties of these flowers.

Norman M'Leod.—Our readers will sympathise with Mr. J. F. M'Leod, of Dover House Gardens, Roehampton, who has just returned from Scotland, where he was called to attend the funeral of his father, Mr. Norman M'Leod, who died about ten days ago at Helensburgh, at the age of 77. Many years ago Mr. Norman M'Leod was concerned with the laying out of the grounds of Garth Castle, also of the first of the Princes Street gardens, Edinburgh. Later, he served as head gardener to A. D. Grimmond, Esq., Glenericht, Blairgowrie; but his last situation was as gardener to William Dick, Esq., of Tullymet. Since his retirement he has lived at Govan. Deceased leaves three sons and five daughters.

NEW INVENTION.

Messrs. Whitelegg & Page, Chislehurst, have sent us a sample of their "Egap" Plant Trainer for supporting the shoots of pot plants. The support consists of thin corrugated wire, for twining around the stem, with a loop for securing it at the top under the flower.



Addresses of Seedsmen: *J. A.* Lists of the principal seedsmen and nurserymen in America are given in the *Horticultural Directory and Year Book*. This work may be obtained from our publishing department, price 1s. 3d., post free.

Apple Trees: *R. D.* The trees are affected with Canker (Nectria ditissima) which is a wound parasite, entering into the living tissue by means of ruptures in the bark of the tree caused by the Woolly Aphis, by "gummosis," etc. It generally attacks trees that are in bad health, neglected, or that have been planted in badly-drained or unsuitable soil. All badly diseased branches should be cut off and burnt. When the attack is only slight, cut out the affected parts, and coat the wound with tar. It is not wise to allow badly cankered trees to remain as a source of infection for others; they should be rooted out and burned.

Chrysanthemums: *A. S.* Your collection of Chrysanthemums is not well chosen for furnishing a supply of cut flowers from the end of September to the end of December. Mary Richardson, Lizzie Adcock, Source d'Or and Sylvia Slade will be the first to bloom, and by growing the plants naturally and hardy they should make bushy specimens that will bloom early in October, and probably in the order named. Mrs. W. Knox, Mrs. Marsham, Valerie Greenham, Reginald Vallis, F. S. Vallis, and Marquis of Northampton are all large Japanese varieties, and they may be grown by selecting three shoots when they break naturally towards the end of this month, selecting the first bud that appears on each shoot. If large blooms are not desired the plants may be pinched now and again at about the second week in June. This will cause them to grow bushy and develop plenty of smaller blooms. Stella, Mrs. McKinley, Elaine and Queen of the Exe are naturally smaller-flowered varieties, and may be pinched as advised above. The plants after this date may be stood out-of-doors, and should be potted into their flowering pots when their present receptacles are filled with roots. Dwarf varieties should be selected for planting out in the ground and lifting again in the autumn. They may be planted at any time now, making the ground (which should not be too rich) moderately firm and lifting them at the end of September. The four first-named varieties will flower very well out-of-doors if given a little protection from frost.

Daffodils Discoloured After a Thunderstorm: *W. B. C.* The damage was not caused by the lightning, as you suspect, but is a typical example of yellow stripe, a bacterial disease. The bulbs are diseased, and should be burned, and the soil dressed with quicklime.

Destruction of Apple Blossom: *J. B., Bicester.* The damage to blossom is the work of caterpillars, only one of which was in the trusses of bloom received. This was the larva of the bud moth (Hedya ocellana). No doubt this is the chief offender, as there is no worse one for the destruction of Apple blossom, though it feeds on the leaves also. If you search with a pocket lens among the trusses of blossom you will probably find a number of small light-brown caterpillars, with black heads, and a black mark just behind the head. They have three pairs of claw-feet near the head, four pairs of sucker-feet in the middle of the body, and one pair at the tail. Possibly some other kind, such as the winter moth caterpillar, is also doing damage. The trees should have been sprayed with arsenate of lead, to poison the food of the pests, before the blossom expanded. It would kill bees to use the poison while the blossom is open. As soon as the petals have fallen, spray with 1lb. of arsenate of lead paste to 25 gallons of water. If you are troubled with the codlin moth caterpillar the wash will serve for that pest also, and for all leaf-eaters. As there are some aphides in the trusses add 2lb. of soft soap to the 25 gallons of wash. Swift's arsenate of lead paste is supplied by the Vaporite-Strawson Co.

Gardener's Wages: *M. J.* A suitable wage for a gardener with the duties and responsibilities as described in your letter would be £2 per week, with house, coals, light and firing provided. But it should be remembered that wages vary according to locality and other circumstances.

Insect in Apple Tree: *H. N.* The insect is the larva of the Wood Leopard moth. The grubs may be killed by running a piece of stout wire along their burrows.

Names of Plants: *Miss H. Potts.* Œnanthe crocata (Water Hemlock), a very poisonous plant which has been mistaken for Celery with fatal results. A veterinary surgeon should be able to say if the plant caused the death of the goat.—*W. P.* Nierembergia frutescens.—*A. S.* (*Garelochhead*). Pittosporum undulatum, an Australian shrub.—*Lucan.* 1, Lathyrus cyaneus; 2, Saxifraga cordifolia; 3, Begonia Imgramii; 4, B. coccinea; 5, B. albo-maculata; 6, Hibiscus Cooperi.—*G. F.* Carex japonica variegata of gardens.—*Hort.* 1, Oncidium pubes; 2, Satyrium carneum; 3, Habenaria arenaria; 4, Polystachya Ottoniana; 5, Angræcum arcuatum; 6, Oncidium incurvum.—*H. C.* Lælio-Cattleya Zampa (C. intermedia × L.-C. Schilleriana).—*Hadley.* 1, Broughtonia sanguinea; 2, Epidendrum atropurpureum, often called E. macrochilum roseum.—*J. A. G.* 1, Send flowers; 2, Pilea muscosa (Artillery plant); 3, Asparagus virgatus; 4, Centaurea candidissima; 5, Acacia armata; 6, Eupatorium gracile.—*W. S.* Centranthus ruber.

Nectarines: *F. H. B. B.* The trouble is not due to disease, and is most probably the result of some defect at the roots, which only those on the spot can determine.

Nectarines Splitting: *A. E. G.* The Nectarines are not diseased. The injury is in some way connected with imperfect root drainage, which has caused the roots to receive an excess of moisture.

Packing Roses for Post: *E. C. V.* Roses for transmission by post should be packed in a strong, flat box (preferably of tin). These can be obtained from horticultural sundriesmen. It is best to post in the evening; but, in any case, the flowers should be kept in water until within a short time of despatch. The Roses should be cut in the early morning or the evening, and placed at once in a deep jar of water, which should be kept in a dark shed or cellar. The blooms should not be sprayed, and no moss should be used for packing. Three or four flowers should be put together, and completely wrapped in grease-proof paper. Another plan is to make a cushion at one end of the box, and lay each flower in separately. When one row is complete a sheet of grease-proof paper should be laid on the stems, and a second row of flowers placed thereon. This can be repeated until the box is full, but there must not be more than one layer. The blooms should then be covered with tissue paper, and a piece of stick stretched across the box, over the stems, to prevent their moving. When the lid is adjusted care must be taken that it does not press on the heads of the flowers. The box should then be wrapped in brown paper—no air-holes are necessary. One great secret of success in sending flowers by post lies in the blooms being well filled with water before they are packed. For this reason they should never be cut during bright sunshine. Roses should be cut rather before they are fully expanded.

Plumbago capensis: *W. P.* This plant may be had in flower by July, especially if afforded warm greenhouse treatment. The plants, having been rested during winter, should be started into growth early in the New Year by introducing them into a house where the temperature will range from 50° to 60°. Plants may easily be brought into flower at successional periods, according to the time they are started and the temperature in which they are grown. When they start into growth they should be pruned back to the required dimensions. If needed in flower during July they should not be stopped later than the end of May, but the time of flowering will vary according to the weather, and the flowering may be hastened or retarded, as required, according to the temperature afforded. Plants that are well established and have filled their pots with roots should be fed with liquid manure and soot water, alternated with an artificial fertiliser, but twice a week is often enough to apply manures of any description.

Roses Diseased: *Lucan.* The leaves are attacked with the disease known as Black Spot (Actinonema rosæ). It is very injurious to Roses, causing rapid defoliation, and spreads quickly unless preventive measures are taken. The difficulty lies in the fact that it infests the wood as well as the foliage, and only becomes apparent when it produces its reproductive organs on the surface of the leaves. If only a few of your plants have been attacked, we recommend you to burn all those that are diseased, gather the old and fallen leaves or other débris in the house, and continue to spray the remaining plants at intervals during the rest of the growing season with a solution of potassium sulphide.

Spruce Fir Diseased: *R. D. G.* The trouble is caused by the Spruce gall. Spray in winter with a wash of 3 lbs. soft soap, 5 gallons water and 1 pint of paraffin, thoroughly mixed.

Tulips Diseased: *J. F. Comp., S. W. T.,* and *A. J. H.* The plants are badly infested with Lily disease. The bulbs should be destroyed, and the soil treated with quicklime.

United Horticultural Benefit and Provident Society: *Garden Instructor.* Apply to the Secretary, Mr. A. C. Hill, 35, Alexandra Road, West Kensington Park, London.

Vines: *J. M., Ireland.* You say the vines were dressed after the cleaning operations, and this may mean that they were stripped of their outer bark. It is not safe to use either paraffin or soft soap on vines thus stripped, because the inner bark is injured thereby. The reason some buds started and others failed to do so is because the latter received a heavier dose of the injurious materials, which may not have been evenly mixed. January is late for lifting vines; they should be lifted in autumn, before the leaves have fallen.

Communications Received.—W. Carr—A. P. G.—Malcolm Gorrie—A. C.—J. M.—O. C., Pangbourne—Constant Reader—S. M. P.—H. P., Southover—Joan—W. T.—R. J. W.—A. D. W.—P. A.—F. J.—S. A.—W. A. C.—R. E. A.—W. J. V.—W. C.—R. J. A.—T. C.—W. K.—W. I.—H. Ward—S. M. P.—Rev. E. H.—B. R.—J. M. L.—R. O. F.—W. W.—W. J. B.—S. and Sons—T. A. C. C.

THE
Gardeners' Chronicle

No. 1,378.—SATURDAY, May 24, 1913.

CONTENTS.

Batata, the Sweet Potato 343
Bordeaux mixture, preparation of 347
Chelsea Show, the ... 346
Cuttings, transporting... 341
Dawson, Mr. William, appointment of ... 348
Edinburgh Botanic Garden Guild 347
Forestry demonstrations in Norfolk ... 337
Iris hunt, a Dalmatian 338
Lancashire County Council School of Horticulture 347
Loiseleuria procumbens 343
Mackenzie, Mr. Alex, presentation to .. 347
Nursery note—
Tulips at Reading ... 342
Obituary—
Cooper, Thomas ... 360
Orchid notes and gleanings—
Odontioda Wm. Thompson 338
The Orchids of Java 338
Orphan Fund, Royal Gardeners' 342
Pests, scheduled—
Black Knot disease ... 340
Perkins, Mr. H. P., presentation to 347
Poppy, abnormal growth of... 338
Rhododendron concinnum 341
Roots, the length of ... 347
R.H.S. Gardens Club ... 347
Rubber, new work on ... 347
Scotland, notes from ... 339
Seed crop prospects in California 347
Seeds and plants collected for the U.S.A. Department of Agriculture 348
Small holdings 346
Societies—
Royal Horticultural 349
Spring flowers in the south-west 339
Webb, the late Edward 343
Week's work, the—
Apiary, the 345
Flower garden, the... 345
Fruits under glass ... 345
Kitchen garden, the... 344
Orchid houses, the ... 345
Plants under glass ... 344
Public parks and gardens 34

ILLUSTRATIONS.

Black Knot disease 340
Chelsea show, exhibits at the 347, 348, 349, 350, 351, 353, 356
Loiseleuria procumbens 343
Papaver orientale 338
Rhododendron concinnum 341

FORESTRY DEMONSTRATIONS IN NORFOLK.

UNDER the auspices of the Norfolk Education Committee, in conjunction with the local branch of the Royal English Arboricultural Society, demonstrations in forestry were given at Westwick on the 2nd inst., by Mr. C. Hankins, of Cambridge, the newly-appointed Adviser in Forestry to the Eastern Counties. The Committee was especially fortunate in obtaining, through the kindness of Colonel B. J. Petre, the use of the Westwick Woods as a demonstration area; for it would be almost impossible to find a more suitable place for such a purpose. There was an excellent gathering of about one hundred and fifty landowners, agents, foresters and woodmen, and the enthusiasm shown by all present was an eloquent testimony of the reviving interest in British forestry, and of the desire to obtain expert advice on the treatment of woods.

The proceedings were opened by Colonel Petre, who, referring to the appointment of Mr. Hankins as Adviser to the Eastern Counties, said that the Cambridge Forestry Committee had made an excellent choice and had selected a thoroughly practical man who has had a great deal of experience of local conditions by virtue of his connection with a large estate in Suffolk.

Mr. E. R. Burdon, Acting Secretary to the Forestry Committee of Cambridge University, thanked Colonel Petre on behalf of the Committee and those present for allowing his woods to be used as a demonstration area, and for the way in which he invited open criticism of them for the benefit of those who had assembled to gain some information upon forestry questions. He wished to emphasise the fact that the Cambridge School of Forestry worked with the hope of becoming not only an academic institution for training students, but primarily one of public utility to the Eastern Counties.

Throughout the day's programme Mr. Hankins dealt with his subject from a purely practical standpoint, and showed his ability in dealing with questions relating to the treatment of woods. He kept his audience thoroughly interested, and the questions asked by various members of the company after visiting each wood manifested the intelligent interest that all were taking in the work. After such a meeting one is inclined to think that the present condition of many woods is not due to lack of interest but rather to the fact that in many cases the woods are left absolutely to the care of untrained men. It cannot be emphasised too strongly that, wherever it is desired to make the upkeep of any extent of woods profitable, there should be a competent and fully-trained forester to tend them.

The woods at Westwick are very varied and stand upon soils ranging from pure sand to heavy clay, so that a short account of the main features which called for comment may be of general interest.

The climate is warm, and the estate, being only about six miles from the sea, has very few hard frosts. The rainfall is from 23 inches to 26 inches per annum, and the elevation about 120 feet above sea level. The woods, which cover an area of about 1,000 acres, were very badly damaged by the gales of the year 1895, so that the working of them has been completely changed.

The first plantation visited was the key to the whole area with respect to the prevailing wind. It was formerly a Scots Pine wood which was blown down by the aforementioned gales. It was re-planted with Larch and Douglas Fir in 1897, but owing to its position Austrian Pine should have taken their places, for both species are very much damaged by wind. Austrian Pine is the most suitable tree for a wind break owing to its deep rooting system and the density of its branches, which are preserved to a great age.

The bad effect of leaving old trees standing over young plantations was marked by the number of Larch and Douglas Fir that have been totally suppressed.

Where Oaks were allowed to remain they have become "stagheaded," and the boles covered with epicormic branches, which greatly reduces the value of the timber.

The experience obtained here with Japanese Larch is quite the contrary to that reported from most places, for during the drought of 1911 scarcely a plant was lost, whereas many trees of the European species were killed. A noteworthy difference between the two species lies in their recuperative powers. A flat of plants of each species were eaten off by rabbits in the nursery in 1903, and in the following year all the trees made a single shoot. The shoots of the European Larch were without exception deformed, and the trees had to be destroyed; but those of the Japanese Larch were straight and very vigorous, and the plants were put out in the woods in the ordinary way in 1906. The trees are now about 12 feet high and growing vigorously.

Several young plantations of Douglas Fir, pure or with slight admixture of Larch, have been badly affected by the wind, many trees being uprooted.

One case in particular is very interesting. On the outside of the plantation many old Scots Pine were suppressing the young trees and, in order to prevent further damage by suppression, they were felled last year. Since that time the wind has made large gaps in the young stand by uprooting the Douglas. Hence it seems that by removing one source of danger a far greater one has been invoked by altering the course of the wind currents. It is interesting to note that every Larch has withstood the wind. From a close inspection of all the young Douglas stands one is forced to conclude that it is inadvisable to plant this species pure or very closely together, owing to its tardy root development as compared with the rapid growth above ground.

In mixture with Douglas, Larch holds its own everywhere on the estate, and where the proportion of Larch or hardwoods is increased, the stand appears to be much more resistant against wind.

On the whole, where Larch is growing on sand it becomes "foxy" and "pumped" at an early age. Where it is grown in mixture with Spruce, canker is very rife; but in pure plantations and in mixture with hardwood species little canker occurs. This condition of woods of mixed Spruce and Larch is one of the commonest cases in the Eastern Counties; and in view of the possible connection between Spruce and the spread of the Larch canker, the mixture ought to be abandoned.

Some woods of almost mature Maritime Pine (Pinus pinaster) were seen. The timber of this species is generally regarded as useless for building purposes, but an apple shed built of pinaster wood 30 years ago, which has not been preserved by tar or any other means except projecting eaves, only just shows signs of decay at the soil level in one or two places.

In many localities the demand for underwood has considerably diminished and often ceased to exist, but at Westwick there is a ready market for Hazel, which is used in making wattle hurdles. A considerable area of the heavier soil is under Hazel coppice with Ash and Oak standards, and fresh woods of this nature are still being planted. The growth is vigorous, and a rotation of six years is worked upon. Many broad-leaved species such as Ash, Oak, Chestnut, Beech, Dutch Elm, etc., grow very rapidly on the better class soil. Sycamore is said to flourish up to about forty years of age, and then practically cease growth. Beech seems to be very little planted in Norfolk where there is light land, but there is no doubt that it is the tree to mix with conifers on such soils.

Although rabbits are fairly plentiful, there is very free natural regeneration of nearly all species throughout the woods. Especially is this the case where areas have been fenced against rabbits, and it is highly probable that if this pest were exterminated or excluded it would be unnecessary to do any planting beyond filling up a few blank spaces. This is true not only for Westwick, but for many other places, and by paying attention to this question the regeneration of woods would become a far less expensive operation. In one instance, an area was fenced in and sown with seed of Corsican Pine at the rate of 1 lb. per acre. The Corsicans have germinated well, and, in addition, the area has be

come a bed of natural seedlings of Scots and Maritime Pines with a few Beeches, so that really there was no need for the sowing. Incidentally, the method of forming woods of Corsican Pine by sowing, the seed being mixed with damp sand and broadcasted, is very cheap and quite efficacious.

Another wood visited was one of Scots Pine about 60 years old which was formed naturally, and, but for a few blanks that should have been filled up in the early stages of the wood, it is in a splendid condition.

A warning note was sounded with reference to the so-called nurserymen's bargains in young plants. A batch of Scots Pine was bought in that way, and all have died since planting out. An examination of the root system of some of the plants showed that it was badly developed and in each case very crooked, assuming almost a U shape. Such plants are most probably "culls," and worthless for planting out. The effect of planting out large plants was demonstrated in a wood where Japanese Larch about five feet high were planted in spring, 1911. Since they were put out they have made practically no growth, look very unhappy, and many have been uprooted by the winds.

One of the features of Westwick is the policy of combining forestry with the rearing of game. On many estates game is an important item, and a large section of owners are under the misapprehension that good forestry and game rearing are totally opposed to one another. That this is not so is well shown at Westwick, for there the properly treated woods on the estate always produce the biggest bag. Mr. Hankins gave it as his experience that pheasants often roost over the heads of men working late in the woods, and that woods properly managed harbour rather than drive away the birds.

Westwick has its share of insect pests, which are very abundant upon the large areas of pure Scots Pine. The most serious are the Pine Beetle, Pine Weevil, Pine Sawfly, and the Pine Shoot Tortrix. The presence of these pests in such quantities emphasises the necessity for removing all dead trees, branches and rubbish of all kinds from the woods, as they form breeding places for the insects. Also where pests may occur—and where may they not?—mixtures are preferable to pure plantations, since once a pest takes hold of a pure plantation the whole is involved. *L. P.*

ORCHID NOTES AND GLEANINGS.

THE ORCHIDS OF JAVA.*

DR. J. J. SMITH has compiled a third and bulky supplement to his account of the Orchid Flora of Java. It contains descriptions of a large number of new species, chiefly belonging to genera having relatively inconspicuous flowers. A feature of this supplement is a revision of the Javanese species of Kränzlin's monograph of the Dendrobinæ which appeared in Engler's *Pflanzenreich*, in 1910 and 1911. Smith severely criticises this work, both as to naming and classification. As an example of the latter he states that Kränzlin's section Bolbodium of Dendrobium contains species belonging to the sections Bolbodium, Cadetia, Oxyglossum, Desmotrichum, Diplocaulobium, etc. Many of Kränzlin's determinations are declared to be incorrect, and many of his new species founded on previously known plants. Sarcanthus and Cleisostoma are regarded by Smith as synonymous, and Pomatocalpa of Breda is revived for the combination. Robiquetia, Gaud., is cited by Bentham and Hooker as a synonym of Saccolabium, but Smith, in a previous article, refers Cleisostoma spathulatum and allied species to this genus. Now he doubts the correctness of this view, though leaves the question open.

* *Die Orchideen von Java.* Dritter Nachtrag. *Bulletin du Jardin Botanique de Buitenzorg.* Deuxième série, No. ix. p. 103.

ODONTIODA WM. THOMPSON.

FLOWERS of his new hybrid named after himself are kindly sent by Mr. Wm. Thompson, Walton Grange, Stone, Staffordshire (gr. Mr. J. Howes), who regards it as his best Odontioda up to the present, and certainly the flowers are very distinct in colour, and fine in shape. Diagonally the blooms are three inches across, the segments being broad and well displayed. The sepals and petals are uniformly of a rich scarlet-red with a tinge of mauve, which is more visible towards the thin white margin. The lip is formed like that of O. Vuylstekeæ, with a prominent yellow crest on a red ground, the front being white with a band of red. It is to be regretted that the parentage cannot be determined, but it is probably the result of crossing a good blotched Odontoglossum with Cochlioda Noezliana.

ABNORMAL GROWTH OF POPPY.

THE accompanying illustration (Fig. 142) represents an abnormal bloom of Papaver orientale that appeared in my garden a short time ago.



FIG. 142.—PAPAVER ORIENTALE.

It grew in company with many normal flowers. The upper figure is one-half the natural size. The lower section is actual size.

It will be seen that the ovules have become transformed into petals, which have grown through the centre of the stigmatic orbicular disc.

In certain wet autumns I have seen the seeds of Papaver somniferum germinate within the capsule and produce green cotyledons, which may sometimes be seen hanging out of the ripe capsule from under the stigmatic disc. The transformation of the rudiments of ovules into petals is, however, not to be compared with this precocious germination, but is a phenomenon similar to that presented by many plants in which stamens are replaced by petals. *W. G. S., Dunstable.*

A DALMATIAN IRIS HUNT.

(*Continued from p. 322.*)

FROM SPALATO TO SEBENICO.

FROM Spalato I took an early morning train through the desolate barren hills of inner Dalmatia to Sebenico. It was a blazing hot day when I got down to the sea at that port, and I was rather loth to go up again to the rough hills. However, local information said that I. pumila was to be found at a place called Razina in the neighbourhood of Sebenico. Guide books knew nothing of Razina, nor had I been able to find it in any atlas. However, in Spalato I obtained the equivalent of our Ordnance Survey map and found that Razina was a district lying five or six kilometers to the south of the town. Fortunately, the district lies low and no point is more than 200 feet above sea-level. This seemed an unlikely place in which to find I. pumila, which I have always looked upon as a plant typical of regions having a cold winter. The ground was very rough; in places the stones were piled in great heaps and used to form massive walls round vineyards, but there were large patches of apparently virgin soil, mostly covered with a tangled growth of dwarf shrubs. For six hours I scoured the district and found nothing. There were Orchids in plenty, including an albino form of O. morio, and Muscari was abundant, but no sign of Irises could I see. I got tired of climbing heaps of stone and of crossing rough tracts of prickly scrub by stepping from one jagged projection of limestone to another, and set out to return to Sebenico, convinced that there was some mistake and that I had come on a wild goose chase. Following a rough track, I noticed over the usual broad stone wall a patch of scrub with more open level spaces than usual. I wondered whether it was worth while to explore this, and almost decided that it was not. It seemed, however, foolish to have come so far and then to hesitate to climb one more wall. Scarcely had I got over it than I saw with surprise two minute little tufts of Iris leaves about an inch high. Careful search revealed other tufts, and though there were no flowers, several withered perianth tubes and finally three green capsules of seed actually longer than the leaves were enough to show that this must be a form of Iris pumila, but why it grows in such a locality has yet to be explained.

Having collected a few plants, I tramped back to Sebenico, weary but content, and went on by a night steamer to Zara. Behind this town there lies a stretch of undulating stony ground, very similar in character to the Razina district. I had been told that I. pumila was also to be found here, and this time I had the good luck to stumble upon a few plants almost as soon as I reached likely ground, although on continuing my search for some hours I found no more Irises. By this time I had discovered that Irises do not like grass, even in the hottest positions. The positions in which they are found are always fairly open, usually facing south or south-west, and the soil contains, besides the stones, a fair amount of the red loam which is found everywhere in these limestone districts.

After Zara, my next objective was the Velebit Range, near Carlopago, but the problem of how to get there was not easily solved. I finally went by a small steamer, from which I had to land about 3 a.m. in a small boat, with half-a-dozen Croatian natives, at Valcassione, which seemed to consist of two huts. From one of these the postman, who was also the boatman, produced two horses for the ramshackle old diligence in which I had to drive across the island to Pago. It was an uncanny landing, and only the postman understood a few words of German and Italian. However, a gendarme, armed with a rifle, appeared on the scene and drove on the box of the diligence. As I walked with him up a long, rough hill, it was just light enough to see that the stony ground was everywhere covered with the white Asphodelus ramosus, a tall Euphorbia and a green-flowered Helleborus.

From Pago I went across to Carlopago, on the mainland, and by the kindness of a friend who had a Croatian guide in waiting, I was able to start off at once up the Velebit Mountains to a small plateau near the summit of Velnaé, where a supposed new species of Iris was known to grow. The ground was the roughest that I think I have ever crossed, mere limestone boulders piled one above the other. As we got up to about 3,000 feet, Crocus leaves seemed to replace grass in the interstices between the rocks, and on the south-west face, as usual, I found a few small Iris plants. This was not, however, the locality for which I was bound; to reach this it was necessary to climb higher. At last we got over the brow on to a turfy hollow, and I shall never forget the sight of this little valley covered with tufts of Gentiana tergestina, through some of which Iris leaves were actually pushing their way. Purple and white Crocuses and a yellow-flowered Primula and Muscari were also abundant. Snow still lay in the hollows facing north, and though Iris leaves were everywhere apparent, no sign of flowers could I discover. The plants look uncommonly like I. pumila; but some herbarium specimens, which Dr. Degen very kindly sent me from Budapest, showed that the flowers were yellow and that the plants must be some other species than I. pumila—possibly a yellow-flowered form of I. aphylla. Both these species seem equally strange at such an elevation in this locality; but then a Sibiræa also occurs on these very rocks, and nowhere else, apparently, in Europe! For the determination of this Iris we shall have to wait until transplanted specimens flower. *W. R. Dykes.*

(*To be continued.*)

SPRING FLOWERS IN THE SOUTH-WEST.

Some of the Rhododendrons that usually flower in February came into bloom about Christmastime. As a rule Rhododendrons are flowering very badly, many great specimens 25 feet or more in height having but two or three bloom-trusses upon them. At Tremough neither R. Falconeri, R. Aucklandii, R. argenteum, R. Gill's Triumph, nor R. Beauty of Tremough have any blossoms, but at Carclew a fine bush of Gill's Triumph, about 10 feet in height and 8 feet in diameter, carried over sixty trusses, and in the same garden R. Sir Charles Lemon, about 25 feet in height, a very beautiful white, has flowered very well. At Carclew is one of the largest examples of the crimson R. arboreum in the south-west. It is 40 feet in height, with a trunk 5 feet in circumference. A fine bush of Feijoa Sellowiana, 6 feet by 6 feet, flowers well, and Illicium floridanum was expanding its first blossoms in April. Pittosporum eugenoides was also in flower, as was P. nigricans; Tricuspidaria dependens had grown wonderfully, being now 20 feet in height and 10 feet through. The rare Rhododendron guttatum was also noted. There are a large number of the beautiful Embothrium coccineum of various sizes in the grounds. At Enys a splendid specimen of Erica mediterranea is 10 feet high and 15 yards in circumference, and Myosotidium nobile was in splendid health and flowering freely. Cornwall has sustained a severe loss in Mr. J. O. Enys, who died last year. Captain Pinwill's garden at Trehane, near Truro, was as interesting as ever. The Erythroniums here are marvellously fine. One garden is practically full of them, growing in leaf-mould collected from beneath a rookery. Many of the clumps are over 2 feet in height, and bear great flowers about 4 inches across. In this garden are numbers of self-sown seedlings, but many beautiful species are also present. There is no garden in the south-west where Erythroniums are grown so well. The great plant of Rhodostachys undina, which flowers every year, is now considerably over a yard across.

The winter has been extremely mild, the greatest amount of frost registered being only 2°. Everything was naturally very forward, the majority of plants blooming quite three weeks earlier than their usual date. Hardenbergia monophylla alba, which usually flowers in the spring, strangely enough came into bloom at Christmas, when it bore about twenty flower-spikes. Iris stylosa came into flower at the end of October, and bloomed well through November, December, and January, but then ceased flowering. It usually flowers well through February and March. Brachysema acuminata came into flower in March, and Edwardsia (Sophora) Macnabiana bloomed fairly well, but not as freely as last year. Euryops virgineus was, unfortunately, killed by the severe frost in February, 1912, as was Arctotis aureola. For the first time for many years Iris tingitana has not flowered, this being probably due to the cold and wet summer of last year preventing the bulbs from ripening properly. The beautiful clear sulphur-yellow form of Gladiolus tristis came into flower in March, far earlier than usual. Celmisias are bearing many buds, which will soon be expanded. The Alpine Clematis, Atragene alpina, has flowered freely. The delicate little annual, Ionopsidium acaule, better known as the Violet Cress, which carpets the ground among dwarf bulbous Irises, was as charming as ever, and it reproduces itself year after year by self-sown seed. The blue Chilian Crocus, Tecophilæa cyano-crocea, was especially lovely when bearing its deep-blue flowers in the early spring; but it is not very happy here, and has been twice lost, whereas in certain other gardens it flourishes and spreads from self-sown seed. The Romuleas are beautiful and rare plants. R. pylia, with satin-white, golden-centred, Crocus-like flowers, was very attractive when in blossom, a dozen or more blooms expanded simultaneously making a pretty picture, and R. nivalis, with white flowers reticulated with blue, is very charming. Correa cardinalis was in flower at Christmas, and is still carrying many blooms. Ranunculus pyrenæus has perfected its lovely white flowers. Ourisia coccinea is a sheet of scarlet, with dozens of bloom-scapes about a foot in height, carrying from twelve to fifteen flowers. In a north-westerly exposure, with plenty of water in the summer, it does well here. Viola gracilis, perhaps the loveliest of its family, is a mat of violet-purple. Lathyrus pubescens, the everlasting, lavender-blue Pea, has ascended a wall to a height of 7 feet, and is now in full bloom, forming a most delightful picture. It is rarely seen in the open in gardens. Watsonia coccinea is throwing up its scarlet flower-spikes, but as yet there is no sign of bloom on W. Ardernei. Fritillaria persica has borne numbers of flower-stems nearly 3 feet in height, the brown blossoms having the bloom of a Grape, and F. obliqua has produced its almost black flowers. Manettia bicolor is flowering freely, and both the crimson and white forms of Clianthus puniceus are blossoming profusely. Many of these plants were killed in South Devon and Cornwall in the severe weather last year. The first flowers from the crimson Clianthus were cut before Christmas Day. Jasminum primulinum was a lovely sight towards the end of March, a fine plant 10 feet in height and more in breadth being a sheet of golden bloom. Olearia insignis, which was obtained direct from New Zealand, is showing several flower-buds, and a seedling is making fine growth. Dendromecon rigidum was ruined by the gale on Boxing Day, every one of its tall shoots being broken off close to the ground; but it is still alive, and one hopes it may recover. The American Erythroniums have flowered fairly well, but they were very far inferior to those already alluded to at Trehane. Semele (Ruscus) androgyna was killed absolutely to the ground level in the severe frost of February last year, but has thrown up new shoots, which are about 20 feet in length, the leaves or cladodes being already edged with the little flowers. Homeria collina is now in full bloom, and is a very pretty sight, with over a hundred flower-spikes of blossoms of an apricot-pink tint flushed with orange, and having a bright yellow eye. This plant is far hardier than Sparaxis or Ixia, though it is also a native of South Africa, and hence it may be grown by those who cannot succeed with the latter plants. Here the pretty Morisia hypogæa thrives to perfection. There is a colony of over twenty plants, and nearly all are now in full flower, their clear yellow blossoms gleaming brightly in the spring sunshine. The splendid specimen of Veronica Hulkeana, which has been illustrated in these columns, died for no apparent reason four years ago, and has been replaced by another plant which is just coming into bloom. However, it will be many years before it can rival the proportions of its predecessor. The Snake's head Iris (I. tuberosa) was very early in bloom, bearing its apple-green and satin-black flowers at the close of February quite three weeks before its usual time. It flowered extremely well, and dozens of blossoms were cut for indoor decoration, where their quaint beauty and delicate scent render them great favourites. The beautiful Iris setosa is just coming into bloom. Its numerous branching flower-scapes are about 2 feet in height, and bear bright purple blossoms about 3 inches across. It is a species seldom met with in gardens. Clematis indivisa lobata has been a most delightful picture for many weeks past. The first flowers opened early in February, but it was not at the zenith of its beauty until nearly the end of March, when it covered a length of over 40 feet of wall with countless thousands of its large, beautiful white flowers, and was the admiration of all beholders. The handsomest of all the Deutzias, D. kalmiæflora, is just expanding its first blossoms, and in the course of another fortnight will be a lovely sight. Genista monosperma, a species of which it was asserted that it would not flower in England, is now covered with bloom. The New Zealand Arthropodium cirrhatum flowered splendidly last summer, and is just showing its blossom-spikes for the coming season. Daphne indica alba, a new introduction, replacing the old plant killed by the drought two years ago, flowered well about Christmastide. Sparaxis have been good, especially that handsome variety Fire King, with rich crimson yellow-centred blossoms, and the white S. grandiflora. Freesias have also bloomed well. Drimys Winteri has never been so fine as it is this season, and in many gardens it is so covered with flower as to be a sheet of white. Calceolaria violacea, which was almost killed in the very hard frost of February 2, 1912, has completely recovered, and is now a large bush over 3 feet in height, which is quickly coming into flower, and Chorizema flava is bearing its yellow blooms. *Wyndham Fitzherbert, Devonshire.*

SCOTLAND.

FLOWERS IN THE SOUTH-WEST.

Notwithstanding the almost abnormally cold and sunless character of last summer, there is a marvellous profusion of bloom on the fruit trees this year. This statement applies specially to Plums and Cherries, and notably to such varieties among the former as the Victoria, Early Rivers, and Denniston's Green Gage (perhaps the most reliable and valuable Gage in cultivation), and among the latter to May Duke Black Eagle, Early Rivers and Morello, of which the variety last mentioned often succeeds admirably in Scotland, with a north-western aspect. There is also every prospect of an abundance of blossom on the Apple and Pear trees, the Irish Peach already exhibiting its charming colour in the buds. The refined, roseate flowers of the Almond have not yet (April 25) appeared, in south-western Scotland at least: but on the slender branches of the Japanese "Pyrus Malus floribunda" there is quite a luxuriance of deli

cate bloom, while the heath-like Kalmia angustifolia, Genista alba, and G. Andreana, may be similarly described. This, altogether, is a wonderful floral revelation, especially when we remember what a limited amount of sunlight there was during last season, to ripen the flowering wood. The Laburnums also promise to be exceptionally bright this year.

On the other hand, the Daffodils have not been so effective, owing to the causes I have indicated, and the consequent imperfect maturation of the bulbs. More than the majority of bulbous plants, they depend upon this benignant influence for the achievement of their finest floral effects. Like many of our grandest Oriental Lilies—such, for example, as Lilium pardalinum and L. monadelphum—they require to be very strongly established before their utmost capabilities can be adequately realised. Some of the finest bicolor varieties, such as Empress and Grandis, were much too rare in my own garden this spring, but I had a splendid display of Victoria, with a noble environment of Narcissus ornatus and N. poetarum, on the lawn in full view of my study window—a uniquely beautiful situation, where the early flowering Tulips, to be followed by the glorious Gesneriana and incomparable Darwin varieties, are also radiant in the grass. Roses are beginning to grow admirably, especially the vigorous hybrid Teas. Among new introductions of the greatest interest which since last October I have added to my collection of 125 distinct varieties, are British Queen—which, seeing that it transcends in central formation and fragrant fascination its magnificent predecessor, Frau Karl Druschki, I hope at least approaches it in capability of vigorous growth—Duchess of Sutherland, Mrs. Charles Hunter, Nerissa, Mildred Blackburn (an effective, free-flowering variety), Lady Hillingdon, Mrs. Charles E. Allan, Countess of Shaftesbury, Leslie Holland, Mrs. Alfred Tate (from which the new brilliantly coloured, decorative Rose entitled "Old Gold," raised at Portadown, in Ireland, by Mr. S. McGredy, is said to be derived), Sunburst (one of the very loveliest and most distinctive varieties sent out by M. Pernet Ducher), Mrs. Wallace Rows (described by the raiser as "Sweet Pea mauve"), Mrs. Herbert Stevens, Duchess of Wellington and Mrs. Amy Hammond. The Sweet Peas to which I am giving special attention this season are Charm, Orchid and Decorator, from Mr. Wm. Atlee Burpee, of Philadelphia and California—the third-mentioned variety is supremely beautiful—Rosabelle, assuredly the most fascinating of its colour, a dazzling, satiny, shimmering Rose; Melba, Brunette (Dobbie and Co.), a veritable mahogany-red; Dobbie's Scarlet, Mrs. Heslington, a superbly effective lavender; Clematis, whose name is expressive of its aspect; and Gustave Hamel, a luminous pink, assuredly a very valuable acquisition.

I have recently re-introduced into my garden the intensely fragrant Lilium Washingtonianum, L. Wallichiannum superbum, and L. Humboldtii var. magnificum, after an absence on the part of those strongly contrasted varieties of several years. *David R. Williamson, Manse of Kirkmaiden, Wigtownshire.*

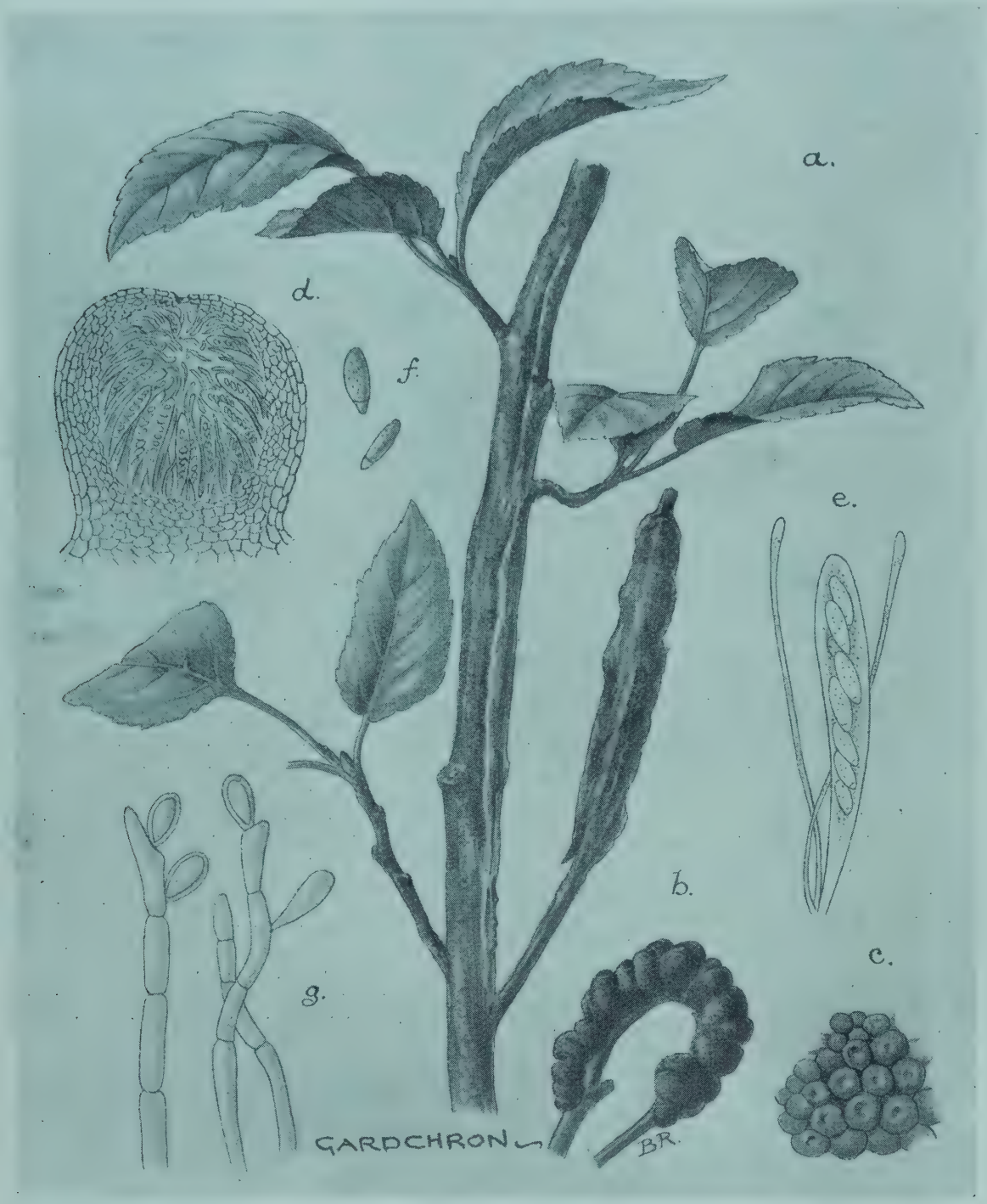


FIG. 143.—BLACK KNOT DISEASE (PLOWRIGHTIA MORBOSA, SACCARDO).

a, Nodulose excrescences on branch; *b*, A separate "knot"; *c*, Perithecia (highly magnified); *d*, Perithecium (showing asci); *e*, Ascus (showing ascospores); *f*, Ascospores; *g*, Conidiophores with conidia.

SOIL-BLASTING FOR TREE-PLANTING.

THE possibilities of soil-blasting for tree-planting are being tested at Allangrange, Dingwall, the estate of Mr. Fraser Mackenzie. So far the operations seem to be highly successful, and the system of blasting appears likely to prove a ready and efficient means of advancing the planting of trees in the north.

NEW FIFESHIRE PARK.

A NEW park for the mining village of Lochore, near Lochgelly, Fife, was opened on the 10th inst. by Mrs. Charles Carlow, wife of Mr. Charles Carlow, the chairman of the Fife Coal Co. The grounds extend to about eleven acres, and have been suitably laid out as a park.

THE PERTHSHIRE FLOODS.

THE heavy rainfall in Perthshire recently caused much damage in gardens. On May 9 the working-men's gardens on Moncrieffe Island, Perth, were flooded, causing loss to the occupiers. Considerable damage has also been done by the rains at Coupar Angus, and on the fruit farm of Messrs. J. Fleming, preserve manufacturers, at Gauldry. The fields were flooded, the water rushing through some of them in torrents. So deep was the flood that the doorstep of the manager's house, which is about the highest point of the farm, was reached by the floods. Great damage has been caused to fruit farms throughout the fruit-growing district, and also to those in private gardens. *Correspondent.*

DESTRUCTIVE INSECTS AND PESTS
SCHEDULED BY THE BOARD OF AGRICULTURE AND FISHERIES.

X.*—BLACK KNOT DISEASE.

IN Great Britain a disease known as Gooseberry Black Knot causes considerable loss among Gooseberry bushes, and is due to the fungus Plowrightia ribesia, Saccardo. A closely related disease, which has been given the name of Black Knot, and is caused by Plowrightia morbosa, Saccardo, is probably the worst pest of cultivated Cherries and Plums in the United States. It is happily unknown in the United Kingdom, but owing to its exceedingly harmful character it has been scheduled. In America it is widespread across the Northern States as far as the Pacific. It was known early last century, and appears to have been first described by Schweinitz in 1822, but a complete account of the fungus and its relation to the "knots" was first published about thirty-seven years ago by Farlow (1876). Accounts have since been published by other authorities, including Humphrey (*Massachusetts Agr. Exp. Sta.*, 1890), Halstead (*N.J. Agr. Exp. Sta.*, 1891), Beach (*N.Y. Agr. Exper. Sta.*, 1892), Lodeman (*Cornell Agr. Exp. Sta.*, 1894), Longyear (*Michigan Agr. Exp. Sta.*), and others.

Black Knot of Cherry and Plum is characterised by large, elongated, black and nodulose incrustations on the branches, the excrescences

* The previous articles appeared on September 27, October 12, November 2, and Dec. 7, 1912; and on February 1, March 1, March 15, April 26, and May 3, 1913.

or knots rendering recognition comparatively easy. In the initial stages of the disease, early in the growing season, the swellings are greenish or olive-coloured, and velvety, but later in the year they become rigid, black, nodulose and brittle.

According to Massee's account of the disease (*Text-Book of Plant Diseases*, 1907), "The Fungus is readily recognised by the formation of black, rough excrescences on the branches; these are often several inches in length, and sometimes cause the branch to curve at the part attacked. The first indication of the disease is the swelling of the branch, followed by a longitudinal cracking and gaping of the bark, and the wounded surface soon becoming covered with a dark olive velvety coating." Duggar (*Fungus Diseases of Plants*) says "the term *Black Knot* applied to this disease is a very fortunate one, since the deformities take the form of elongated blackened knots, usually extending a distance of from 1 or 2 to 4 or 5 inches upon the affected branches. For the most part the injury is confined to one side of the branch, or at least it does not generally form a complete ring, which would effectually cut off the nutriment from the tip portion."

The appearance of the "knots" is shown in the accompanying illustration (Fig. 143 *a*), which also shows the microscopic details of the fungus. The mycelium invades the cambium and bast as well as the cortex. Duggar describes the symptoms thus:—"The knot itself is made up of a mass of tissue, comprising, on the one hand, dense areas of the fungus and, on the other, various cells or tissue elements of the host. Bast fibres, parenchyma cells, and even vessels may be found in this heterogeneous mass in which all of the associations of cells normally present have disappeared." In spring the mycelium breaks through the bark, and from it arise septate conidiophores (Fig. 143 *g*), at the tips of which simple, light brown spores are produced, and from which short branches may grow. The conidiophores are the cause of the velvety surface, which later in summer becomes black and rough, when perithecia form. The perithecia, as seen with a lens, have the appearance of small pimples with a minute depression in each (*c*). They contain asci (*d* and *e*), each of which produces eight ascospores (*f*), which ripen between mid-winter and spring.

Both conidia and ascospores germinate in water, and hence Black Knot may be spread at all stages—by the mycelium, the conidia, and the ascospores.

The foregoing brief account shows that Black Knot is a disease which British fruit-growers can well do without: an alien whose entry would be most unfortunate.

In the case of badly affected trees the only certain remedy would appear to be immediate destruction of all affected parts of the trees. When trees are newly attacked, however, the knots forming in spring should be cut out and burnt. Other prunings should follow later, as may be necessary, knots being removed or burnt whenever seen. In particular the trees should be gone over carefully at winter pruning, with the same object in view. Wild Plum and Wild Cherry may also be affected, and it has been found advisable in the United States, in addition to pruning diseased cultivated trees, to spray them with Bordeaux mixture in late winter as a protective measure, again in spring before the knots burst, and subsequently as may be necessary. It is recommended by the Minnesota Agricultural Experiment Station (1911) that the first spraying should be with a 6-6-50 Bordeaux mixture, but this strength applied later would injure foliage, and a 3-4-50 mixture is suggested. Spraying experiments with atomic sulphur and self-boiled lime-sulphur were conducted by the Connecticut Agricultural Experiment Station in 1911 but are to be repeated. *H. C. Long*

RHODODENDRON CONCINNUM.

RHODODENDRON CONCINNUM is one of the numerous early-flowering evergreen species introduced from Western China during the past ten years by Messrs. James Veitch and Sons. The plant flowers freely when quite small, bushes only three years old being covered with blossoms in the early spring. It is wise to select a sheltered spot for the plants, so that the flowers may open without being damaged by frosts, as the majority of these Chinese Rhododendrons, especially those with small leaves and free-branching dwarf habit, are not perfectly hardy. Provided this precaution be taken, many of these newcomers make charming garden plants, their floriferous character alone being sufficient to merit a little extra care and attention. I have in mind such plants as R. rubiginosum, R. racemosum, R. fastigiatum, R. intricatum (the flowers of which are the nearest shade to blue amongst the Rhododendrons), R. Benthamianum, R. Augustinei, R. yunnanense, R. siderophyllum (which is scarcely more than a small flowered form of R. yunnanense, R. combense, and R. ambiguum. R. concinnum, as the specific name denotes, is a decidedly pretty plant. The flowers are rosy-purple in colour, are usually borne in clusters of three to five, and freely produced all over the numerous branches. They are 1½ to 2 inches in diameter, and about three-quarters of an inch in length; the lobes are slightly reflexed and the dorsal petal is spotted with reddish-brown. The tube is narrow at the base, spreading to nearly an inch at the top, and slightly angular. The calyx—which is such an important character in this genus—is variable, being usually obscurely lobed, but the lobes may vary in length up to one-sixteenth of an inch, and are then triangular in shape. The stamens are ten in number, variable in length from ½ to 1¼ inch, the longest being nearly equal in length to the style; the filaments are white, and hairy at the base, whilst the anthers are brown. The style is comparatively stout, 1¼ to 1½ inch long, and the stigma green. The short, twiggy branches are crowded with leaves on the apex, the lower parts of each season's growth being devoid of foliage and densely clothed with dark brown lepidote spots, these being of a light yellowish green when young. The leaves are shortly petiolate, elliptic to ovate, 1 to 4 inches in length, dark green above, densely clothed with small, reddish-brown lepidote spots beneath. The whole plant is strongly aromatic.

The species was first described by Hemsley in the *Journal of the Lin. Soc.* xxvi (1890), p. 21, from material collected by the Rev. Ernest Faber in 1887 from the summit of Mount Omei, Szechuen, China. Specimens have also been collected on the Tibetan frontier by A. E. Pratt at an altitude of 9,000 to 13,500 feet; by Mr. E. H. Wilson and Mr. A. Henry at an altitude of 8,000 to 11,000 feet in Western Szechuen, where it is said to grow in woods and thickets, forming a bush up to 10 feet high. *C. P. Raffill.*



FIG. 144.—RHODODENDRON CONCINNUM: COLOUR OF FLOWERS, ROSY-PURPLE.

TRANSPORTING CUTTINGS.—Dormant cuttings of hard-wooded plants travel well, and may be sent in boxes, but soft, herbaceous cuttings are apt to be destroyed when sent long distances. A simple device for keeping herbaceous cuttings alive on a journey of many weeks' duration is described by Mr. G. W. OLIVER (U.S. Bureau of Plant Industry, *Circular* No. 111). By means of it cuttings of Clover, Alfalfa, and many other plants may be kept in good condition for weeks. The cuttings are packed between two sheets of strong glass (5 by 7 inches, or larger). They are arranged thus:—A layer of cuttings is placed on one sheet so that the leaves are next the glass, and 2 or 3 inches of living Sphagnum-moss is spread over them. Another layer of cuttings is placed in position, with the under-surface of the leaves next the moss. Over this layer the second sheet of glass is placed, pressed down firmly, and the two sheets are tied together by means of stout twine. If they can be kept moist and exposed to light the cuttings not only suffer no injury, but if the journey be long enough, *e.g.*, of 4-6 weeks, cuttings of Clovers, Alfalfas, Dorycnium, Lotus, etc., make roots in transit. The method should prove useful for [illegible]

NURSERY NOTE.

TULIPS AT READING.

It is always interesting to visit a large nursery on the eve of an important exhibition, for it supplies an admirable opportunity of seeing the results of many weeks of care and labour—the plants intended for the show are at their best and have not yet undergone the very trying ordeal of packing, transit and subsequent unpacking, with the attendant risk of injury. On the occasion of our visit to Messrs. Sutton and Sons' nursery, on Saturday last, the staff were busily engaged in packing large vans with splendid plants of Calceolaria, Streptocarpus, Nemesia, Gloxinia, Schizanthus, etc., to be despatched to Chelsea for the Show. The greenhouse Calceolarias were magnificent, and, indeed, we have never seen finer specimens. The Streptocarpus were equally good and the Clarkias perfect models of what well-cultivated plants should be. However, our chief object in visiting the nursery was to inspect the May-flowering Tulips, of which Messrs. Sutton's displayed such a splendid collection at the R.H.S. Meeting on the 14th inst. We proceeded to their large grounds on the London Road and saw there broad belts of these brilliant, shimmering blossoms; a few were past their finest stage, but many were at the very height of their bold, flaunting beauty. The main plantation, however, is in the Southcote Manor Nursery, some two and a half miles distant from Reading. Southcote Manor is a delightful, old-world spot, the mansion, solid and homelike, exhibiting a fine example of domestic architecture; the gardens, bounded by walls almost as massive as those of the house, carry one back in spirit to olden days. Probably these gardens never presented so gay an appearance as they do to-day. Masses of bright blossoms meet the eye in every direction, and in a warm corner, where the sun's rays can reach, but from which the winds are excluded by a high wall, we found the May Tulips. They are the most charming of flowers and offer a bewildering variety of colour. At Southcote Manor they are planted with much taste according to shades, each shade gaining, rather than losing, by comparison with the rest. Dorothy, Nora Ware, and La Tristesse, all show a dove-coloured ground, in some cases shading into silver. Margaret is a lovely pink, with a deeper tint inside and a delicate blue centre. Queen of Roses bears a description in the name: the tint is a lovely blush-rose, paling towards the edges. May Queen is an almost perfect goblet of old-rose; Edmée is another rose-coloured variety, shading to silvery-pink at the edges; and Madame Krelage resembles Edmée, but is not quite so bright. Mrs. Cleveland is a beautiful, rosy, self-coloured variety, with a pale blue centre. Clara Butt is well known as a standard variety, and is considered the finest of the pink Darwins; Geley Larate is a member of the same section, with bright purple-rose petals, shading to rose-claret. Loveliness may be regarded as a companion variety to Clara Butt, but a little deeper in shade. Baronne de la Tonnaye is a fine, full, rose-pink variety, with stems two feet high. Europe is a scarlet flower, with a base of pure white. Henri Vilmorin is a fine flower, but does not grow so tall as some others; Glow, Whistler and Pride of Haarlem are all splendid varieties of dazzling hue. Mrs. Farncombe Sanders is a large red variety, very popular in gardens. In King's Court we have a flower of peculiar hue—a combination of purple, bronze and rose. The stem is particularly tall and the bloom wonderfully vigorous. Turenne also shows a purple ground with bronze shades, the inside somewhat paler. Bacchus is a dark purple-maroon variety, with blossoms of a beautiful shape. The dwarf-growing Hecla is conspicuous by reason of its bright, claret-red colour, and Don Pedro, of a mahogany colour, forms a fine contrast with it. Arizona is a fine dark variety, of a large size, and Wilberforce is one of the newer members of the same section. A popular dark Tulip—Sultan—is just now in excellent condition, and so are Black Chief and Zulu, which bear their descriptions in their names. Canossa, a soft rose-tint; Louise de la Vallière, a rich salmon-pink; Queen of Brilliants, a vivid salmon, shaded with scarlet; Ariadne, scarlet; King Harold, chestnut crimson; William Pitt, deep scarlet, with a fiery margin; Bouton d'Or, a fine rich yellow, with thick, broad petals; Inglescombe Yellow, a beautiful clear primrose colour; Leghorn Bonnet, a pretty pale buff yellow; Parisian Yellow, a rich lemon yellow, with deeper centre and pointed petals; Picotee, a large, elegantly-shaped, white flower, with a margin of carmine rose; La Merveille, with large, bronzy-orange flowers, delicately perfumed; Orange King, a fine globular variety, bright orange tinged with bronze, with rose shading and clear yellow centre; Orange Globe, a brilliant orange-scarlet, with darker base; Panorama, a very large globular flower, bronzy-orange red, with a black centre. These varieties are but a selection, small compared with the enormous choice which is offered to the bewildered visitor to the grounds. The Tulip has made wonderful strides during the last few years, and nowhere is this progress more apparent than at Reading, where each variety is seen at its very best under the most favourable cultural conditions.

ROYAL GARDENERS' ORPHAN FUND.

ANNUAL FESTIVAL DINNER.

May 15. — The twenty-fifth anniversary gathering of the friends and supporters of this gardening charity was held on Thursday, 15th inst., at the Hotel Cecil, Strand. The chair was occupied by the Rt. Hon. Col. Mark Lockwood, M.P., and others present included Hon. Thomas Mackenzie, High Commissioner for New Zealand, Messrs. N. N. Sherwood, Edward Sherwood (Treasurer), H. B. May (Chairman of Committee), Tyndale White, J. Newton Mappin, W. E. Churcher, E. A. Bunyard, W. E. Corry, R. Hooper Pearson, J. F. McLeod, George Ingram, George Monro, Arthur Turner, P. Rudolph Barr, R. W. Wallace, Donald Anderson, Frank Reader, Chas. Dixon, W. H. Cutbush, J. McKercher, G. H. Cuthbert, Geo. Reynolds, W. Howe, — Metcalfe, W. H. Lees, G. Caselton, R. B. Leech, W. Bates, J. T. Taylor, W. Poupart, T. N. Cox, James L. Kinnell, W. Nutting, Geo. Gordon, E. S. Mansfield, John Rochford, T. W. Sanders, R. Ballantine, D. Ingamells, F. J. Foster, J. Collingridge, G. Prickett, A. Dimmock, and O. Hiehle.

After the loyal toasts had been proposed and received with musical honours, the Chairman gave "The Royal Gardeners' Orphan Fund." Col. Lockwood asked his hearers' indulgence for the few remarks he proposed to offer, stating that although he had been engaged in public work for a period of twenty-five years, and had had a varied experience of men and places, from a visit to an Eastern bazaar to a squabble in Parliament, it was the first time he had occupied the chair at a London banquet. It was a great pleasure that the first occasion was as Chairman of the Royal Gardeners' Orphan Fund dinner. A great deal devolved on the chairman at such functions, said Col. Lockwood, in order to make the meeting a success, and he was aware of his own limitations. But he appealed to his audience to make the meeting a great success, as the Institution was in need of funds to carry on its good work, and they were largely dependent on the results of the dinner for their income.

However old or however infirm a person might be, there came a time when he forgot his troubles in wandering around his garden enjoying the delights it offered. A garden was a great return for a small amount expended, and it provided a fund of pleasure which could never fail, but always increased. But many, said the speaker, enjoy the pleasures of their gardens, and consider when they have paid their gardener they have done all they are expected to do. He wished to know if the children of women gardeners were entitled to the benefits of the Fund, as he considered they should have an equal claim with those of male gardeners. He considered there was a greater *esprit de corps* among horticulturists than in any other profession, and this was shown in these dinners, for those who were present had come to assist those who were in need of help. The Fund, said Col. Lockwood, was administered without highly-paid officials, and money subscribed went direct to those for whom it was intended.

The Treasurer, Mr. Edward Sherwood, responded. He congratulated Col. Lockwood on his return to health and thanked him for his appeal on behalf of the orphans of gardeners. They were anxious, said Mr. Sherwood, to raise sufficient money this year not only to meet the estimated expenditure but to make certain investments for which the Committee had not been able to set aside any funds. They had increased their liability in making provision for a great number of candidates, but he reminded his hearers that this liberality could not continue unless extra support was forthcoming. Last year the sum distributed totalled £1,796 10s. He wished to remind gardeners that 5s. was sufficient to maintain an orphan for one week, which was only 1d. per week and 2d. on Bank Holidays. Thus all could help in the good work. Although gardening was one of the healthiest of professions, there were large numbers of gardeners who died whilst they were young men. He gave as an instance a father who died one day and his wife two days afterwards, leaving six young children.

Mr. H. B. May, in proposing the health of the Chairman, remarked that these dinners had been presided over by many men of distinction, but never before had they a more genial or more able chairman, to whose numerous gifts was added that of being a good gardener.

The toast of "The Visitors" was proposed by Mr. N. N. Sherwood and responded to by Hon. Thos. Mackenzie.

The Secretary, Mr. Brian Wynne, announced that the subscriptions amounted to close on £1,250. The principal sums included twenty



THE CHELSEA SHOW.

Fig. 145.—CAMPANULA STEVENII NANA: FLOWERS BLUE. (See page 357).

guineas from the Chairman; Mr. N. N. Sherwood and his sons, one hundred guineas; G. H. Cuthbert, £81 16s. 6d.; G. Reynolds, £55 16s. (including £25 from Messrs. Anthony Waterer); J. Newton Mappin, £50; Leonard Sutton, £50; Sir Frank Crisp, £38; Messrs. Rothschild and Sons, twenty-five guineas; R. B. Leech, £34 11s. 6d.; J. F. McLeod, £30; W. Nutting, £18 18s.; David W. Thomson, £18 1s. 6d.; Frank Reader, £15 9s.; W. Howe, £14 12s. 6d.; W. H. Cutbush, £14 9s.; R. Hooper Pearson, £13; A. W. Metcalf, £12 8s. 6d.; W. H. Cook, £11 5s. 6d., Sir Trevor Lawrence, £10 10s.; James Buchanan, £10 10s.; Sir Jeremiah Coleman, £10 10s.; Messrs. James Veitch and Sons, Ltd., £10 10s.; Messrs. Barr and Sons, £10 10s.; T. W. Sanders, £10 10s.; F. C. Stainsby, £10; G. Caselton, £7 7s.; T. Stevenson, £7.

The following each subscribed five guineas:—Sir Harry Veitch, John Margetson, C. J. Mee, Alfred Savill, G. Beckwith, Corry and Co., Ltd., H. B. May, W. E. Churcher, Osman and Co., Geo. Monro, Ltd., R. W. Wallace, J. T. Anderson and Sons and C. P. Kinnell and Co., Ltd.

The sum of £5 was contributed by each of the following:—Sir Fortescue-Flannery, M.P., Major Maud, G. J. Bentham, M.P., Walter C. Clark, Otto Beit and Mrs. Cassel.

Covent Garden subscribed £159 2s., of which amount Messrs. J. D. Ingamells and G. E. Messer collected £105 10s. and Mr. H. L. Wright £33 12s.; and Mr. W. Poupart, £20. The lists included ten guineas from Mr. John Rochford and five guineas each from J. Collinridge, Butler Bros., Forster and Robins, H. O. Larsen, Geo. Messer, wife and daughter, Jessie F. Smith, Joseph Rochford and Parsons and Co.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

The Late Mr. Webb.—With reference to your notice of Mr. Webb's will (see p. 293) as a seedsman, you omitted to say he was interested in two or three breweries, including the well-known Phipps and Co., of Northampton. It is most unlikely he ever made such a fortune from any retail seed business. *Onlooker.*

Loiseleuria procumbens.—The plant shewn in the photograph (fig. 146) is now (May 12) in bloom in the rock garden of Arthur Mountain, Esq., of St. James' House, Grimsby, and was collected by him in South Norway from the wind-swept, rounded top of a hill 3,000 feet above sea level, where snow cannot lodge, on which eminence the plant has braved all weathers, fully exposed to the icy winter's blast and the scorching heat of the summer's sun. It is a truly magnificent specimen, measuring 26 by 16 inches, and in shape resembles a tortoise, the highest part being 12 inches high. Robinson, in *The English Flower Garden*, writing of Loiseleuria procumbens, says: "Its bloom is not attractive"; but the reverse is really the case, for it would be difficult to imagine anything more delightful and charming than the bright, rosy flowers, intermingled with scarlet buds, standing out from the glistening greeny-bronze foliage. The shrub is at present a blaze of colour, dominating the position it occupies; it gives the beholder an impression of beauty and vigor, catching the eye and eliciting expressions of admiration even from visitors not usually interested in the garden. Mr. Mountain considers it to be the best specimen he has met with in the land of flood and fell during the last 25 years, and the Norwegians fix its age at from 30 to 40 summers. *Harry Barker.*

"Among the Hills."—I fully accept M. Correvon's most interesting and convincing explanation as to the Roman use of Mont (Mons) where "Pass" alone is meant. None of this, however, affects the humour of those long and detailed descriptions of a positive (but non-existent) Mt. Iséran, which continued until recently to make its appearance on maps as an eminent peak, mother of three rivers. The explanation of the error is plain: its comic consequences none the less remain, and remain comic. It was to these alone that I made allusion. Had Mr. Stuart Thompson had *Among the Hills* to his hand he would have found that I merely gave there the precise story of Mt. Iséran, quoted from Ball, in detail as unadorned as it was in Mr. Stuart Thompson's own quotation from the same authority. *Reginald Farrer.*

Batata, or Sweet Potato (See p. 332.)—A few remarks on the native methods of cultivating this vegetable in tropical Africa, where it forms an important item of food, may be of interest and suggest methods suitable for this country. Planting is done at almost any season of the year, but preferably just before rains. The land is prepared by deep digging, and the soil is heaped into ridges or mounds about one foot high. Shoots about two feet long are then cut from the old plantations, and without any trimming or removing the leaves are buried in the mounds, only just the tip of the shoot protruding. The latter are arranged in a more or less horizontal position, but lower in the middle than at either end. Growth commences very quickly and tubers soon form. Even in the dry season growth goes on, but more slowly. Such cuttings never seem to fail to grow. The tubers are ready for eating in about four months. They are not dug like Potatos, but the large tubers are searched for in the mounds with a small stick and removed. The field will give tubers over a period of several months. The natives will never propagate from tubers, and they have often told me that no crop results from this method. I would advise your correspondent to try starting the tubers into growth very early, and when shoots over a foot long are obtainable, to cut them off and plant over a hotbed in the manner I have described. An ordinary frame should accommodate about ten cuttings. These could all be put in a mound in the centre. The vines can be allowed to creep anyhow, and eventually, when the weather is warm enough to remove the lights, may extend outside the frame. An abundance of water when the plants are well rooted will assist the rapid production of large tubers. The points to remember are: that the Sweet Potato is an exceedingly gross feeder, and that the plant must be started early in the year to allow of a long season for growth. Sweet Potatos may be cooked by all the methods employed for ordinary Potatos; cut into thin slices and fried they are delicious. It has often surprised me that the cultivation of this vegetable is not more common in this country. The plant is a heavy cropper. *E. Brown, Oakdale, Avenue Road, Cranleigh, Surrey.*

———I know nothing about the cultivation of the Sweet Potato under glass, but some years ago I held the post of manager of the Admiralty farm and gardens on the Island of Ascension, where there were about thirty acres of Sweet Potatos under cultivation. This plant is a Convolvulus (C. Batatas), and has long, trailing stems 10 or 12 feet long. The ground for its reception is prepared with a spade, and the cuttings planted in rows about 2 feet apart, leaving one foot between each plant. The cuttings are taken in the usual way—each stem is cut immediately below a joint and again above the next joint, each cutting being thus 9 inches to a foot long. The crops are mature and ready for use in about a year, but may be left in the ground longer; if they are taken up they do not keep for any length of time. If tubers are planted instead of cuttings they produce stems, but no fresh tubers. The plants require very little water, especially after the cuttings have once become established. With regard to methods of cooking, they can be boiled or baked under a joint of meat, but are best cut in thin slices and fried. *N. D. Cowans, Lilburn, Northumberland.*

Rhododendron pallidum (see pp. 230, 264, 332.)—My resuscitation of Turczaninow's Azalea pallida is not merely a "technical claim to priority," as is implied by Mr. Raffill (p. 332), but simply an expression of justice and wholly in conformity with the rules of botanical nomenclature sanctioned in Vienna several years ago. Of course, the dual and often conflicting nature of the Kew and Vienna rules are fully recognised, but the almost universal adoption of the latter and the gradual abeyance of the former are points deserving of consideration. All will admit that Turczaninow's name, pallida, in its priority demands its adoption and retention, no matter what is involved; and, moreover, being based upon a Latin description this contention is substantiated. Hence the invalidity of *W. W.'s* proposed name, Rhododendron pallidum, and my attempt in setting matters right, by suggesting as an alternative R. edinense, which your correspondent points out is antedated by a like name accorded by *W. W.* to another hybrid about twenty years ago. Mr. Raffill fails to point out the vital fact that R. edinense W. W. (R. Nuttallii × R. Henryanum) is a *nomen nudum*—a name unaccompanied by a description. It might be contended that the citation of the hybrids concerned in the production of the earlier R. edinense might be sufficiently descriptive provided the resultant possessed intermediate characters, but the general vagaries of even primary hybrids are sufficiently illustrative and fail to support the argument. The corollary thereto is that my proposed name, R. edinense, for the more recent Edinburgh and Kew hybrid must remain, and to further substantiate this claim the descriptive remarks of *W. W.* and Mr. Raffill serve to validate. *R. A. Dümmer.*



Fig. 146.—Loiseleuria procumbens.

The Week's Work.

PUBLIC PARKS AND GARDENS.

By SUPERINTENDENT.

RENOVATING LAWNS.—Bare, worn patches of grass are very unsightly in public parks and gardens, whilst their renovation entails a much greater amount of time and attention than is generally supposed. Where traffic is greatest, and particularly on and adjoining the areas devoted to games, the grass fares worst, while beneath large and spreading trees it is always a difficult matter to retain the turf in a satisfactory condition. Turf that is constantly used for cricket, football or drilling gives a considerable amount of trouble to maintain in a good order. Paths or "near cuts" across the grass from one point to another, where no gravelled walk exists, are also a source of trouble, and have a decidedly objectionable appearance. Where such are to be found there is generally good reason why a proper path should be maintained. There is the equally objectionable path which runs alongside the gravel walk, but this, in nine cases out of ten, is the direct result of keeping the surface of the roadway in a rough and impassable condition. By studying the public wants in the matter of convenient roads and paths good may be brought about, and much unnecessary treading on the grass avoided, a point that should never be lost sight of when laying lawns in public parks and gardens. We can hardly expect pedestrians to traverse two sides of a triangle when following the base will bring them quicker to the desired point. The reclamation of bare and worn-out grass-land should be taken in hand about the beginning of May, the ground being first fenced round in a temporary manner, for it is wasted labour to attempt renewal of the turf if the public are allowed to trample on the newly-sown ground. A single wire placed on posts 3 feet high surrounding the ground is all that is required, with, perhaps, a few notice boards requesting the public to keep off the newly-sown grass. The bare patches should then be lightly forked over to a uniform depth of about 6 inches, and, if the soil is found to be of poor quality, the admixture of a small quantity of fresh loam or decayed vegetable matter will act as a stimulant to the grass. As digging proceeds the soil should be broken finely and the surface raked in order to remove all stones and clods to insure a fine seed bed. Seed sowing may take place at any time during still weather, and the seeds should be sown evenly and thinly over the surface. They require but little covering; all that is necessary is to lightly disturb the surface of the ground with a wooden rake, and finish with a light rolling. The variety of grasses will depend on the nature of the soil, and whether the work is carried out in the town or country. Most grasses do well in the country, but the following species have, after repeated experiments, been found suitable for the town park and garden :—Agrostis (species), Cynosurus cristatus, Festuca duriuscula, Poa pratensis, and the short perennial Rye grass in about equal proportions. From 12 lbs. to 16 lbs. to the acre will suffice. The annual Poa (P. annua) is one of the best grasses for town gardens, particularly beneath trees and in shady situations, where it reproduces itself freely, and always presents a pleasing appearance. I know of no other grass that will reinstate itself so quickly as this annual Poa, and for this reason it is particularly valuable for using on parade or drill grounds, or wherever it is subjected to an unusual amount of trampling. In order that the young grass may be given a fair chance of becoming established the temporary fencing should be retained for a period of at least six months, and longer if possible. The after-management of grass plots in large towns consists of an annual top-dressing of light, rich soil applied during winter and raked in during the spring. Amongst the various artificial manures none is better suited for the London parks and gardens than "Phytobroma," which should be mixed with about six times its bulk of wood-ashes and applied early in May.

THE KITCHEN GARDEN.

By JOHN DUNN, Foreman, Royal Gardens, Windsor.

BRUSSELS SPROUTS.—If seeds were sown in February to furnish plants for early supplies, good strong seedlings should be available for planting out now. Assuming that the ground was trenched and manured in winter, nothing further will be necessary beyond hoeing the surface of the bed before the plants are put out. Set them in rows made 3 feet apart and allow a distance of 2½ feet between the plants in the rows. Make the soil firm about the roots and afford the latter a liberal supply of clear water until they are re-established. Plants that will furnish the main crop should be ready for transplanting in nursery beds, allowing a distance of 6 inches between the plants each way. The plants should be ready for planting finally early in June.

CAULIFLOWERS.—Plants which were raised from seeds sown last September and planted out in April are growing freely, and should receive liberal supplies of manure water from the farmyard. Hoe the soil between the rows and draw a sufficient quantity to the stems to prevent the plants from being shaken by rough winds. Plants raised this spring should be planted in rich soil and watered freely. When they have become established hoe the soil between the rows frequently, as this will favour healthy growth and keep the ground free from weeds. Another sowing should be made to furnish plants for autumn supplies. Early London and Halloween Giant are good varieties that may be selected for this sowing.

CUCUMBERS.—Plants in unheated pits should be thinned freely and the laterals stopped at the first or second joint beyond the fruit. Top-dress the bed when roots appear through the mounds of soil and peg the leading shoots to the earth to encourage fresh roots to develop. The growth should not be allowed to become crowded but should be regulated at least once weekly, taking care to remove all spindly shoots and rough leaves. Syringe the plants twice daily in fine weather, and close the pit as early in the afternoon as can safely be done. A cold, stagnant moist atmosphere should be avoided, or mildew may prove troublesome. Seeds should be sown for successional plantations, choosing Dickson's All-the-Year-Round.

CARROTS.—A sowing of main-crop Carrots should be made as soon as possible to afford roots for winter supplies. The ground for this crop should be thoroughly broken up and made as fine as possible. Sow the seeds in shallow drills and cover them lightly with fine soil. Make the surface smooth with a wooden rake, taking care not to disturb the seeds in the process. When the young plants are large enough they should be thinned to 6 inches apart. Apply light dustings of soot on frequent occasions during the season, as this will stimulate growth and keep the carrot fly in check. Continue to make small sowings of stump-rooted Carrots from now onwards until the end of June, to furnish supplies of young roots throughout the season and save using those which are intended for winter supplies. The first sowing should be ready for thinning; a space of 3 inches will be quite sufficient between the plants, as they are intended for immediate consumption.

GLOBE ARTICHOKES.—Old plantations of Globe Artichokes should be examined and all worthless suckers removed, leaving only a few of the stronger shoots on each plant. Afford the plants liberal supplies of manure water during the growing season. Those recently planted must not be allowed to suffer from want of water at the roots.

FRENCH BEANS.—To ensure a plentiful supply of French Beans throughout the season it is necessary to make frequent sowings from now onwards. Seeds may be sown at this date in any part of the garden provided the soil is rich enough to ensure quick, clean growth. It is much better practice to sow fortnightly throughout the summer than to make larger sowings at longer intervals.

BEET.—The principal sowing of Beet intended for next winter supplies should be made about the middle of May. The ground for this purpose should be pulverised thoroughly and the seeds sown in shallow drills drawn at 15 inches apart. When the young plants are large enough to handle they may be thinned to 9 inches apart in the row. Improved Globe is one of the best varieties for summer and autumn supplies, but if long roots are desired, Veitch's Selected Red or Dickson's Epicure may be chosen. Turnip-rooted Beet raised from seed sown early in the year should be thinned to 6 inches apart. Keep the hoe at work amongst the plants, taking care not to injure the roots.

PLANTS UNDER GLASS.

By F. JENNINGS, Gardener to the DUKE OF DEVONSHIRE, Chatsworth, Derbyshire.

IVY-LEAVED PELARGONIUM CHARLES TURNER.—This variety of Pelargonium is suitable for training as standards. Select the more vigorous plants, remove all the side growths up to within 6 inches of the head and secure the stem at close intervals to a straight stake. When the stem has grown to a suitable length it should be stopped by pinching to allow the other shoots to develop, stopping them when they have made sufficient growth, in order to secure a good, bushy head. If the plants are stood out-of-doors to harden take care to choose a sheltered position as the plants are very brittle and may be injured by rough winds. If the plants are required to flower early in the autumn it is not advisable to place them out-of-doors, but to grow them in the conservatory or a cool house.

CROSSANDRA UNDULÆFOLIA.—This beautiful free-flowering stove plant may be propagated from cuttings inserted at almost any time. Plants raised from cuttings inserted at the present time will be useful for brightening the stove-house in January and February. The shoots should be inserted singly in thumb-pots filled with fine soil mixed with plenty of sand. Stand the pots in a close frame provided with gentle bottom heat, and when rooted shift the plants into larger pots. For the final potting employ a mixture of rich loam, peat and leaf-mould, with coarse sand and wood ashes added. Grow the plants throughout in a warm house.

VERBENA MISS WILLMOTT.—This beautiful variety of Verbena is suitable for decorating the conservatory and dwelling house. Plants raised from cuttings rooted at the end of March and early in April that are established in 3-inch or 4½-inch pots are ready for a final shift. Pot them in a mixture of rich loam and leaf-mould with coarse sand, wood ashes and decayed cow manure, and a little peat added. After they are potted grow them in a warm house or frame for a few days and soak the soil thoroughly with water. Avoid exposing the plants to cold draughts, as they are very subject to attacks of mildew. Should mildew appear dip the plants bodily in a solution of "Sulphurcide," and continue this treatment until the mildew disappears. Grow the plants in a warm, moist atmosphere with a night temperature of 55° until the flowers are opening, when they may be placed in the conservatory or greenhouse. Cut the shoots back slightly when the plants have passed out of flower and save those that are required for stock purposes another season.

MARGUERITES. — Plants of such varieties of Marguerites as Queen Alexandra and Mrs. F. Sander that are required for flowering early next autumn should be ready for their final shift into 6-inch or 8½ inch pots. The soil should consist of a mixture of rich loam, leaf-mould, wood-ashes, coarse sand, mortar-rubble, fine bones and soot. Place the plants in a close frame, well water the roots and syringe the foliage. At a later stage they should be hardened gradually. Be on the watch for the leaf-mining maggot and directly it is detected remove the affected leaves. It is a good plan to syringe the plants occasionally with weak soot water. The date for pinching the shoots should be governed by the period the plants are required in flower. It is a good plan where plants are required for successional blooming to pinch small batches at different periods.

CUTTINGS. — Salvias, Heliotrope, Eupatorium and other plants raised from cuttings inserted in the spring should receive careful attention, affording them larger pots as required. Where early plants of Cinerarias and Calceolarias are required a pinch of seed may be sown in finely sifted soil and germinated in a cold frame or on a shelf in a north house. Cover the pot or pan

with glass and paper until the seedlings appear, when air may be afforded gradually as growth advances.

THE FLOWER GARDEN.

By Edward Harbiss, Gardener to Lady Wantage, Lockinge, Berkshire.

Summer Bedding.—There will be an inclination to extend the season of spring bedding a little longer than usual this season owing to the plants flowering so late. In these circumstances it will be wise to advance the preliminary work as much as is possible, so that when the time for bedding-out arrives the work may be carried out with the least possible delay. Beds which have been planted with spring flowers will require a little manure when preparing them for summer bedding plants. The materials from an old Mushroom bed are suitable for the purpose, but should they not be available a little artificial fertiliser or well seasoned soot may be employed. While waiting for the finish of the spring flowers the mixed border and other outlying beds may be planted. Calceolarias, Arctotis, Dahlias, Asters, Lobelia cardinalis, Ageratum, Verbenas, annual Phlox, Salpiglossis, and nearly all kinds of annuals may now be planted. The general scheme of decoration will before now have been decided upon, but it is not too late to introduce one or two new features. The plants which are used for bedding purposes cover a much wider range of variety now than formerly, and in consequence there is no difficulty in making great changes in the general bedding scheme year after year.

May-flowering Tulips.—Bulbs of Tulips growing in beds which are to be planted with summer flowering plants should be lifted carefully and replanted in prepared ground in the reserve garden. This class of Tulips furnish flowers for indoor decoration during the month of May, and a sufficient quantity should be planted in the reserve garden for the purpose. Provided the ground is rich enough, May-flowering Tulips are well adapted for naturalising in grass. Bulbs which have been grown in pots may be planted in the wild garden.

Japanese Irises.—Iris Kæmpferi is probably the most popular and beautiful of all the Irises, but unfortunately it does not adapt itself to all kinds of treatment, and although some measure of success is often attained by cultivating it in the open in rich, deeply-tilled soil, there is no doubt these Irises are more at home on the banks of streams or pools. Suitable conditions may easily be made by using artificial water, and by this method of culture the plants may be dried off during the resting season, which is a great advantage. Imported plants should be procured and planted at once. They enjoy a rich rooting medium, and, unless the natural soil is substantially rich, a portion should be removed and replaced with loam and well rotted manure. Iris Kæmpferi may also be grown successfully in pans or shallow tubs, immersing the receptacles in water to the depth of two or three inches. Old-established plants may be taken up and divided. Those which are not disturbed must be cleaned of weeds. Lightly fork up the soil amongst them and afford a top-dressing of well-decayed cow-manure.

THE ORCHID HOUSES.

By W. H. White, Grower to Sir Trevor Lawrence, Bart., Burford, Dorking.

Phalænopsis.—Such species as Phalænopsis amabilis (grandiflora), P. Aphrodite, P. Schilleriana, P. violacea, P. Lueddemanniana, P. Esmerelda, P. Stuartiana, P. Sanderiana, P. sumatrana, the almost deciduous P. Lowii, also the supposed natural hybrids P. leucorrhoda, P. casta, and P. intermedia Portei, having finished blooming have commenced to develop fresh roots and leaves, and should be examined at the roots. Some of the plants may need increased space, for the potting materials may be decayed and need replacing by fresh compost. Phalænopsis may be grown either in teakwood baskets and cylinders, or in pots or shallow pans; I find they grow best in the first-named receptacles. In any case, whenever it is necessary to afford the plants more space take special care not to injure the roots by detaching them roughly from whatever they are clinging to; the growing points of the young roots are especially susceptible to injury. Established plants that are well rooted in small baskets may be placed with their old baskets in larger receptacles, filling the space between with clean crocks and surfacing the whole with a thin layer of freshly-gathered Sphagnum-moss. By this plan no roots are injured, nor do the plants receive the least check. Deteriorated plants growing in large baskets should be placed in others a size smaller and treated for a time just as if they were freshly imported plants, merely filling up to the collar of the plant with clean, broken crocks. The crocks should be kept fairly moist by spraying them several times a day, and when new roots appear a thin layer of moss should be placed over the surface. Healthy plants that are well rooted and have room for further development should be afforded fresh moss, removing as much of the old Sphagnum as possible. Small, weakly plants with few or no roots should be placed in small Orchid pans, to be transferred again to baskets when they are established. For the first few weeks after transference water should be afforded with great care, merely sprinkling the moss on the surface and around the sides of the basket; but immediately the young roots begin to fasten themselves on the wood and the new leaves advance in growth a more abundant supply of tepid rain-water is necessary. These plants are natives of the hottest regions of the East and require a very warm temperature. During the summer a north situation is suitable, as direct sunshine is not an advantage. Afford the plants plenty of ventilation whenever the weather is favourable. At night, when the outside temperature is not lower than 50°, we leave the bottom ventilators wide open, maintaining a temperature of 65° to 70° by fire-heat. If afforded fresh air in moderation the plants are not so liable to attacks of spot and disease as when grown in a close, stuffy atmosphere. In houses where the atmosphere is kept nearly always at saturation point insect pests rarely attack Phalænopsis, but where the house is naturally dry thrips and red spider multiply with great rapidity and quickly disfigure the handsome foliage. Periodical fumigation with some vaporising compound will destroy insect pests, and it is as well to wash the leaves occasionally with clean tepid rain-water, using a soft sponge.

Odontoglossum citrosmum.—As the plants pass out of bloom they may be re-potted if necessary, and as they make but few roots use only a small receptacle. Ordinary flower-pots furnished with wire handles are preferable to baskets. Afford plenty of drainage and pot firmly, using a mixture of Osmunda and A1 fibres. By making the compost firm the pseudo-bulbs retain their plumpness for a long period during the resting season. Suspend the plants well up to the roof-glass of the Mexican or Cattleya house, and if possible in a position where they may obtain plenty of fresh air, especially at night. For a week or two after re-potting keep the surface of the compost merely moist, but when in full growth afford water copiously.

FRUITS UNDER GLASS.

By James Whytock, Gardener to the Duke of Buccleuch, Dalkeith Palace, Midlothian.

Melons.—Plants bearing fruits on the point of ripening need to be kept moist at the roots to maintain the foliage green and healthy, as healthy leaves are very necessary for the production of Melons of high quality and flavour. As the fruits show signs of ripening admit air in increased quantities, but continue to maintain a warm temperature. Later plants trained to single stems that have reached the limits of the rafters are throwing out lateral shoots on which the female blossoms develop, and the laterals should be stopped at two joints beyond the fruits. Pollinate the female blossoms during times of bright sunshine, and when a sufficient number of fruits have set on each plant—which may be seen by the embryo fruits swelling rapidly—restrict the growth of the plants by pinching the side growths at two joints beyond the fruit. The trellis should be well furnished with foliage, and sufficient of the other shoots should be trained in for the purpose, but avoid crowding. As the fruits develop they will need supporting. A piece of garden netting may be used for the purpose, and this may be tied to the trellis with a cord. Where Melons are planted on a narrow ridge of soil the roots must be top-dressed as soon as they appear above the surface. They may be covered two or three inches deep with rich, heavy loam, or, if the compost is light, it should be mixed with some artificial manure. Apply the top-dressing as often as the roots show through the surface. The soil having been kept somewhat dry in order to assist the setting of the fruit, a copious watering may be applied at this stage now that the fruits are swelling rapidly. In order to further assist the plants, place a little soluble concentrated manure in the water, which should never be allowed to wet the collar of the plants. The night temperature of the pit should range from 70° to 75°, according to the weather, allowing a rise of 10° or 15° in the daytime. Syringe the plants gently during the afternoons of bright days, and at other times during the day damp the walls and paths frequently to supply atmospheric moisture in order to destroy red-spider. A sowing of Melons may be made for successional fruiting and seedling Melons may be planted on a mild hot-bed in a frame or pit. The plants will furnish ripe fruit in the early autumn.

Cucumbers.—Plants in full bearing must be stopped regularly and thinned of all superfluous growth, but do not remove the leaf just above the fruit. Avoid overcrowding of the growths and leaves and take care not to overcrop the plants. As the season advances, and after the plants have been in bearing for some time, the older growths may be removed by degrees and young shoots trained in their places. This will result in the plants giving a regular and continuous supply of fruit for some time to come. As the roots appear on the surface of the soil lightly sprinkle the latter with artificial manure and afterwards cover with a top-dressing composed of loam and short, decayed manure. Water the roots liberally and, on occasions, supplement the clear water with liquid manure. During the afternoons of fine days the foliage may be syringed gently at the time of closing the house, and the paths and bare surfaces damped. This will permit of the temperature rising to between 80° and 90°, falling as the night advances to 70° or 75°, according to the weather. When very hot sunshine prevails after dull days, the roof-glass should be shaded slightly during the middle of the day. Cucumbers may be grown during the summer in frames or pits. They should be planted in a mild hot-bed made with leaves and dung, setting the plants in the centre of each light on a small heap of soil consisting of half loam and half well-decayed manure. If the plants are given proper attention in the matters of airing, atmospheric moisture and making the most of sun-heat, they will furnish good crops.

THE APIARY.

By Chloris.

Grading.—When the sections are removed they should be examined, and, if possible, graded. Those may be classed as the first grade which are free from thickened cappings—often due to leaving the sections too long on the hive after completion—which have a good appearance, with the comb attached to the wood all round, with most of the edge cells filled with honey and sealed, and which have few pop holes. Those having a few of the defects described above must take second place; while those with more serious defects should be consumed at home. The empty or nearly empty drawn-out combs will be invaluable when the clover honey begins to flow. To secure straight combs do not omit to use good dividers, the best of which are made of perforated zinc or tin.

Showing Honey.—All sections should be even in quality, and all of the same kind of cells, *i.e.*, not mixed drone and worker, and it will be found that the finished worker cells always look better than the coarse drone cells. The former have a white appearance in the case of clover and heather honey, and this cannot be got when drone cells are tolerated. Do not glaze the sections at once, but store them in a clean, dry and warm cupboard. Should it be necessary to glaze at once, then re-glaze before placing them on the show bench to give them a fresher appearance, and do not lace heavily. The maximum width is three-quarters of an inch.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the **PUBLISHER**, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher. — *Our Correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the* PUBLISHER; *and that all communications intended for publication, or referring to the Literary department, and all plants to be named, should be directed to the* EDITORS. *The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.*

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS, 41, Wellington Street, Covent Garden, London.** *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

Special Notice to Correspondents. — *The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

Illustrations.—*The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.*

Local News.—*Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, MAY 26—
Surveyors' Inst. meet.

TUESDAY, MAY 27—
Messrs. J. Waterer and Sons' Rhododendron Sh. at R.H.S. Hall (4 days). Bath and West and Southern Counties Soc. Sh. at Truro (5 days).

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich—54.5.

ACTUAL TEMPERATURES :—

LONDON.—*Wednesday, May* 21 (6 p.m.). Max. 64°. Min. 48°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday, May* 22 (10 a.m.); Bar. 29.8. Temp. 59°.
Weather—Raining.

PROVINCES.—*Wednesday, May* 21.—Max. 57° Ipswich; Min. 53° Peterhead.

SALES FOR THE ENSUING WEEK.

TUESDAY, WEDNESDAY and THURSDAY NEXT—
The entire collection of Orchids formed by Herr Gust. H. Muller-Abeken, of The Hague, at 1. By Protheroe and Morris. At 67 and 68, Cheapside, E.C.

WEDNESDAY NEXT—
Hardy Bulbs and Plants, at 1.30; Palms and Plants, at 5. By Protheroe and Morris. At 67 and 68, Cheapside, E.C.

The Chelsea Show.

The success of the exhibition of the Royal Horticultural Society, which opened on Tuesday last in the grounds of the Royal Hospital, Chelsea, has exceeded all expectations. The brilliant appearance in the two-acre tent brought vividly back to the mind the glories of the great show of last season, and it seemed that we were again witnessing an international display of the world's horticulture, so large and numerous were the groups, and so magnificent the quality of the varied exhibits. In the earlier hours of Tuesday people passed from flower-bed to flower-bed, admired the plants, remarked upon the extent of the display, and contrasted again and again the beautiful surroundings and the disposition of the groups with the conditions which prevailed at recent Temple Shows. It was perfectly obvious that everyone was more than pleased with the change, and took the greatest delight in assuring themselves that hereafter it would be incumbent on the Society to hold its summer exhibitions in conditions no less excellent than those which obtained this week. We fully share the popular feeling and most heartily congratulate the Society on the splendid realisation of a policy that has been urged for a long time, and in many places, including our own columns.

But it would be ungracious to forget, and especially at this moment, the deep debt of gratitude we owe to the Benchers of the Inner Temple for past favours. By generously lending their gardens to the Society for a long series of years the Benchers made it possible for the great show of the season to be held in the very heart of the metropolis, and upon a site that is rich in historic associations of a kind that must appeal to horticulturists in general, and to rosarians in particular. It is impossible to estimate how much the Temple flower shows have contributed to the success which the Royal Horticultural Society has experienced in the past twenty-five years, but those who are most closely associated with the management of the Society's affairs will be amongst the first to admit that the spring exhibitions have been the means of attracting large numbers of new Fellows every season. The regard in which the Temple Shows have been held was evident indeed last year, when the holding of the International Exhibition rendered a Temple fixture impossible, and caused on that account much disappointment to many of the Fellows. The Temple Shows were popular from the commencement, and their success increased on every occasion, until they attracted exhibits and visitors in such numbers that the available ground was no longer sufficient to accommodate either the one or the other. The series has now terminated, and the cessation of the world-famous Temple Shows is due to nothing but the phenomenal success which attended them. In these circumstances, and with feelings of gratitude to the Benchers, we look forward to the natural development of a succession of super-Temple Shows at the new site at Chelsea, where there is ample space both for exhibition and for inspection.

An excellent start has been made, and the Council and Society's officials merit congratulation upon the efforts made to ensure that exhibitors and visitors should take kindly to the change of site. The Directors of the International Show last year may have contributed to this end by demonstrating practically the excellence of the Chelsea ground, but this circumstance should not obscure the fact that the labours of the Society on the occasion of this first effort have been much more onerous than usual, and that they have been discharged with the utmost credit. Thanks are alike due to the exhibitors for the loyal manner in which they support the Society at all times. When the trouble and expense which exhibitors undertake are considered it becomes self-evident that the efforts of the Society are well backed, as well by the trade as by amateurs.

Some of the rock-gardens at Chelsea appeared as if formed to last a generation rather than for the short period of three days, and the great number of plants that go to the making of such exhibits as those contributed by Messrs. Sutton and Sons, Carter and Co., Veitch, Webb, Piper and others give to the observant an impressive demonstration of the vast amount of time and labour devoted by our leading horticulturists to their business and their art.

With respect to novelties it may be admitted that the exhibition was scarcely of first-class importance. There were new hybrid Orchids and some pretty varieties, but nothing that caused such surprise as the first Odontioda, which was staged at a Temple Show held in 1904. Messrs. Piper's exhibited very interesting old specimen Wistarias, that were valuable as showing several distinct varieties, and there were new varieties amongst Roses, Begonias, and other florists' flowers, but perhaps the greatest novelty of the show was Olearia chathamica, a new and distinct species, with flowers of the most dainty character.

As we have already stated, most of the exhibits in the tent were disposed in the most natural manner, so that many of the groups appeared as ordinary beds in a general scheme of flower gardening. The experience gained on this occasion will, we trust, convince those responsible for the arrangements that this method is better than any other for the purpose of exhibition, and it is to be hoped that it alone will prevail, at least in the large tent. On future occasions exhibits that require stages and backgrounds altogether out of keeping with the design should be accommodated in other tents. It is desirable also that a separate tent be provided for garden implements that cannot be shown out-of-doors. With these small additions, and with rather fewer beds, so arranged that the perspective will extend from the centre of the marquee to its boundaries, the exhibitions on the Chelsea site should become as nearly perfect as is possible for mortal affairs to be.

SMALL HOLDINGS.—The annual report on the Small Holdings Act shows that the total area of land leased or sold for the purpose of small holdings amounts to 168,015 acres. Of this land 37,000 acres have been leased direct to 2,984 holders by private owners; 124,709 acres have been let by County Councils to 8,950 holders, and 6,094 acres have been leased to 49 "small holdings associations"; and 212 acres have been sold to 20 smallholders. During the five years since it has been in operation the Act has provided about 15,000 holdings. In 1912, the number of applicants was 4,076, together with 13 associations, and of these 2,278 individual applicants and 13 associations have been accepted as suitable. The number of applications received in 1912 was less than in 1911, but greater than in 1909 or 1910. The demand for holdings is very great in Norfolk, and considerable and increasing in the Isle of Ely, Cambridge, the Holland division of Lincolnshire, Bedford and Somerset. After discussing various directions in which improvements may be effected in the administration of the Act—particularly in the establishment of colonies of small holdings wherein co-operation may be practised—the Report concludes by pointing out that the Act has proved of benefit to the rural population; it claims that the stream of migration from

the rural districts, both to the towns and the Colonies, has been checked, that of the holdings established there are comparatively few that have proved to be failures, and that not a few of the tenants are anxious to increase the size of their holdings.

THE LANCASHIRE COUNTY COUNCIL SCHOOL OF HORTICULTURE.—The scheme of agricultural education adopted by the Lancashire County Council includes a school of horticulture. Of the county farm of 329 acres at Hutton, some four acres have been set aside for the purposes of a horticultural station. Certificates will be awarded to students who follow the horticultural course, and the County Committee is prepared to grant studentships to a limited number of persons who have been engaged in garden work for a period of not less than six months. The studentships will be tenable for one year.

NEW WORK ON RUBBER. — The Cambridge University Press will publish shortly a book on *Rubber and Rubber Planting*, by Dr. R. H. Lock. It deals with the history of the use and cultivation of rubber, its botanical sources, the botanical physiology of rubber and latex, the diseases, chemistry, and manufacture of rubber, and with rubber planting.

PRESENTATION TO A NURSERY MANAGER.—On the 13th inst. Mr. ALEX. MACKENZIE, who is retiring from the managership of Messrs. THOS. METHVEN AND SONS' Warriston Nursery, Edinburgh, after service for more than forty years, was presented with a purse of sovereigns and an album containing the names of the subscribers. The presentation was made by Mr. KING, the president of the Scottish Horticultural Association, who referred to Mr. MACKENZIE's long connection with the Association.

R.H.S. GARDENS CLUB.—The annual outing and general meeting of the R.H.S. Gardens Club will be held on June 14, when a visit will be made to the John Innes Institute at Merton. Particulars may be obtained from the Hon. Secretary, Mr. R. J. WALLIS, 131, Maldon Road, Colchester.

PRESENTATION TO A GARDENER.—Mr. H. PERKINS, who has been Gardener at Greenlands, Henley-on-Thames, for thirty years, has just retired. The occasion was marked by the presentation of an illuminated address and a purse of gold, as evidence of the esteem in which Mr. PERKINS was held by his friends and colleagues.

EDINBURGH ROYAL BOTANIC GARDEN GUILD.—The first meeting of the Guild will be held in the Lecture Hall of the Royal Botanic Garden, Edinburgh, at 8 p.m. on Wednesday, June 4. A President, Vice-Presidents, Committee, Secretary and Treasurer will be appointed, and it is hoped that there will a large attendance.

ACCIDENT TO MR. JOHN HEAL, V.M.H.—We regret to learn that Mr. JOHN HEAL, of Messrs. Jas. Veitch and Sons, Ltd., met with a serious accident at Putney on Sunday last, when he was knocked down by a runaway horse. His injuries prevented his appearance at the R.H.S. Show

THE LENGTH OF ROOTS.—The statement that the roots of a specimen of Cucurbita maxima measured by CLARKE attained to the prodigious length of 80,000 feet is used often by teachers in order to impress on scholars the importance and efficiency of the root-system of plants. From recent careful measurements it would appear, however, that CLARKE'S figure is exaggerated and applies perhaps to JONAH'S gourd, but not to any other cucurbit. A careful computation of the total length of the root-system of a flourishing plant of Cucumis sativus gave the respectable but more modest figure of 280 feet.

SEED CROP PROSPECTS IN CALIFORNIA.—According to our contemporary *Horticulture* disquieting reports are coming from California regarding the seed crop prospects. The seed-growing districts are said to be suffering from lack of rain. During the past two years the excellent seed crops of California have helped to make good the shortage of seed raised in Europe, and it is to be hoped that that country may be spared the misfortune of light seed crops this year.

PREPARATION OF BORDEAUX MIXTURE.—Experiments made by Mr. L. A. HAWKINS (U.S. Dept. of Agriculture Bull. No. 265) indicate that Bordeaux mixture may be made by adding *concentrated* calcium hydroxide to dilute copper sulphate, or vice versâ, provided the mixture be sufficiently agitated. By this method the inconvenience of diluting the substances in separate and necessarily large vessels is avoided. To render it adhesive, Mr. HAWKINS recommends 2 lb. of rosin fish-oil soap to 50 gallons of a 3-2-50 Bordeaux mixture. Next to rosin fish-oil soap ground glue appears to be the



THE CHELSEA SHOW.

FIG. 147. FORMAL GARDEN EXHIBITED BY MESSRS. J. CARTER & CO.

most effective adhesive. Without a suitable adhesive the value of Bordeaux mixture is very seriously reduced.

SEEDS AND PLANTS COLLECTED FOR THE U.S. DEPARTMENT OF AGRICULTURE.—As is always the case, the Bulletin of "Seeds and Plants Imported" makes interesting reading. In the present instalment (Bulletin 261) various plants collected by Mr. F. N. MEYER in Central Asia are enumerated. They include a new durum wheat, the Yeiskaia, from Russia, which has proved extraordinarily hardy; two wild forms of Medicago falcata, the Siberian alfalfa, the Siberian Cherry—a form of Prunus fruticosa, which is a low bush not over 4 ft. high, perfectly hardy and extremely drought-resistant, the fruit of which, though very small, makes an excellent preserve. As the Bulletin observes, it is not easy to find fruit bushes that will live in the interior of Alaska, where the temperature falls to – 58° F. and the summers are short and cool. Yet it appears probable that two varieties of large-fruited Black Currant from the Yakutsk province of Siberia will prove equal to the test. Of Asparagus, with respect to which it might be thought that no improvement is necessary—except in respect to rust resistance—the list includes two forms, one of which (from Table Mountain, South Africa) is said by Sir PERCY FITZPATRICK to be "a great delicacy and to my taste better than any cultivated kind." Fruit growers in this country should note that one of the American importations is an Italian Plum, the Papagone, which was obtained near Naples, and is said by Dr. EASEN, who secured it, to be the finest plum he has ever eaten in any country—3 inches long, greenish-yellow in colour, with a thin, slender stone.

FORESTRY APPOINTMENT.—The General Board of Cambridge University have appointed Mr. WILLIAM DAWSON, B.A., B.Sc. Agr. (Aberdeen), Lecturer in Forestry at Aberdeen University, to succeed Mr. AUGUSTINE HENRY as Reader in Forestry at Cambridge. There is reason to believe that the lectureship will be replaced in a short time by a professorship. Mr. DAWSON is an Aberdonian and still quite a young man. He passed through his University career with distinction, taking prominent places in botany, zoology, economics and agriculture. On completing his studies at Aberdeen he went to Germany and Austria, and studied forestry at Tharandt and Munich under the guidance of Professors NEGER, NEUMEISTER, and MAYR. On his return to Scotland about six years ago he was appointed first Lecturer in Forestry at Aberdeen, where he has done very good work, the number of students having increased considerably under his Lectureship. Besides teaching, he collected large quantities of museum material, much of which he brought from the Hungarian Exhibition, and the Forestry Department of Aberdeen is now one of the best equipped in the country. Mr. DAWSON is in great request as an advisor on matters of afforestation, and some eighteen months ago he conducted a tour of the Scottish Forestry Committee to the leading Forest Schools in Germany and other parts of the Continent. A valuable report on this tour has recently been issued.

A NEW LARCH DISEASE IN SCOTLAND.—Messrs. BORTHWICK and MCWILSON record in *Notes from the Botanic Garden, Edinburgh*, No. 36, a "Pine-leaf rust," or Peridermium, which has made its appearance on Larch in Scotland. The fungus which gives rise to the disease—Peridermium Laricis—has not been recorded previously in Scotland. It attacks the Larch early in the season, and is found fully developed in leaves only three weeks old. At so early a date as June 30 the diseased branches shed their leaves. The fungus is always found on the upper side of the leaves, and sometimes also on the lower side. The outstanding æcidia, or cluster cups, are arranged in rows on either side of the mid-rib, and the number on a leaf varies from 6 to 15. In the early stage the æcidium, or pseudo-peridium, is closed, but when the spores which it contains are ripe it is open on its free side. The spores are numerous and orange-yellow in colour. This fungus is distinguisned from Cæoma Laricis, which produces orange-yellow spots on the leaves, by its upstanding pseudo-peridium.



THE CHELSEA SHOW.

FIG. 148. FLOWER BEDS FORMING PART OF MESSRS. SUTTON & SONS' EXHIBIT.

ROYAL HORTICULTURAL SOCIETY

EXHIBITION AT CHELSEA.

May 20, 21 and 22.

THE spring show, formerly known as the Temple Show of the Royal Horticultural Society, was held on these dates in the grounds of the Royal Hospital, Chelsea.

About 10 acres was leased from the hospital authorities for the purpose of the exhibition, and it was expected that this would prove ample, but the entries were so numerous that only half the space applied for could be allotted, and no late applications were entertained. Some little saving of space was effected by placing the tables closer together, but this was a great disadvantage and caused crowding. The large tent was erected by Messrs. Piggott Bros., and we understand that the major portion will be used again in connection with the York Gala. The timber used in the erection of the tent weighed 70 tons. The building of the rock gardens and the erection of the tent was started some nine days before the opening of the show under the superintendence of Mr. S. T. Wright, who informed us that he had received every facility from the Hospital authorities. Special drains were laid to carry off the roof water, and stand pipes provided both in the tent and for the rock gardens. H.M. Queen Alexandra, Princess Victoria, and the Duchess of Fife visited the exhibition on the first day. As showing how numerous visitors were on the Tuesday, at one time more than a thousand chairs around the bandstand in the Ranelagh Gardens were all occupied, whilst at the same time the tents were crowded. The rock-gardens provided the greatest change from the Temple Shows. The rockery arranged by Mr. J. Wood, Boston Spa, was the finest conception of this style of gardening we have seen. The principal subjects, beside the rock-gardens, were Orchids. Roses, Carnations, Rhododendrons, Gloxinias, Pelargoniums, Ferns and hardy flowers. There were not many exhibits of fruit, and only a moderate display of vegetables. The arrangements were carried out without a hitch, and the thanks of every one are due to the Secretaries, the Superintendent, Mr. S. T. Wright, Mr. Frank Reader, and the other members of the staff, for the help rendered to exhibitors, visitors, and the Press.

Orchids.

One of the large stretches of staging extending the whole length of the main tent was occupied by the Orchids, the various groups being staged so as to form a fine feature from a spectacular point of view. In number they were beyond the average of the usual May shows of the Royal Horticultural Society, and probably they occupied a greater extent of space. All were of excellent merit, and displayed the outcome of good cultivation, but although there were a larger number of plants entered to go before the Orchid Committee (over eighty), there was not a large proportion of really new and distinct things.

Lieut.-Colonel Sir Geo. L. Holford, K.C.V.O., Westonbirt, Tetbury (gr. Mr. H. G. Alexander), as usual when he exhibits, filled the place of honour, his grand group being staged at one end of the staging at the entrance. The plants, one and all, were superbly grown, and demonstrated in the highest degree the beauty of their various sections. The backing of Cocos and Kentia Palms, mingled with the scarlet and orange coloured sprays of Epidendrum radicans, and E. O'Brienianum, had masses of the bright-yellow Oncidium Marshallianum overhanging noble specimens of Cattleya Mossiæ, which bore between them over 200 flowers, the finest of the named varieties being Mahomet, a grand form with 15 flowers; Parsifal, Valhalla, Marmion, de Ruyter and A. Dimmock, all very distinct; and several white-petalled kinds, including a fine specimen of C. M. Reineckiana. Other Cattleyas in great beauty were C. Skinneri, with 8 large spikes, and a smaller specimen of Temple's variety; a dozen plants of the charming white C. Dusseldorfei Undine, raised at Westonbirt, bearing together over 50 flowers; C. Magnet; varieties of C. Mendelii. including the pretty form named May Queen; C. Schroderæ in fine examples, the variety Geisha being very distinct; C. Hyeana splendens, of a rich mauve purple colour, and the clear white C. intermedia



THE CHELSEA SHOW.

Fig. 149.—ODONTONIA LÆLIA SANDER: PETALS AND SEPALS BLOTCHED WITH RED.
See Awards, p. 351.

alba. Among the sprays of white Phalænopsis Rimestadiana, the bright-red flowers of Renanthera Imschootiana appeared, and beside them arrangements of the fine forms of Miltonia vexillaria, for which the Westonbirt collection is noted, and which included a typical form with 59 flowers; the variety Snowflake, with 15 spikes, bearing together 85 flowers; marmorata, with 75 flowers; and virginale, with 125 blooms. The Lælio-Cattleyas were finely displayed, and included L.-C. Fascinator (one with 4 spikes); L.-C. Britannia, L.-C. callistoglossa, L.-C. G. S. Ball Westonbirt variety, forms of L.-C. Ganymede; Glaucus, luminosa, Ophir and others. Odontoglossum crispum varieties and hybrids noted were O. c. Zoroaster and Lucy Spinner, very attractive; O. illustrissimum, O. ardentissimum xanthotes Westonbirt variety, O. amabile and O. eximium King George. Among these were the scarlet sprays of Odontioda Cooksoniæ, O. Charlesworthii, O. Vuylstekeæ and O. Bradshawiæ. Other beautiful specimens in the group were Brasso-Cattleya Digbyano-Schroderæ, B.-C. Digbyano-Mossiæ, including its pure white variety Queen Alexandra; B.-C. Madame Hye, Brasso-Lælio-Cattleya Veitchii and other hybrids of Brassovola Digbyana, etc.

Messrs. Charlesworth & Co., Haywards Heath, followed with a fine group, the salient points at each end being of fine specimens of Miltonia vexillaria Empress Augusta Victoria and home-raised crosses from it, which retained the characteristic deep rosy-mauve colour of the parent, but in larger flowers. The centre was of Lælio-Cattleya Fascinator (L. purpurata × C. Schroderæ) of fine quality, the best noted being splendens, cœrulescens, Princess Margaret, rosea, Prince of the Asturias, Queen of Denmark and nobilior, all distinct and fine in shape. With these were L.-C. Ulysses var. delicata, L.-C. Sylvia, several very fine L.-C. Dominiana, etc. Odontiodas and Odontoglossums were shown in profusion. Among the former the best forms of Odontioda Charlesworthii are very brilliant in colour; O. Queen Mary and O. Chantecleer very effective. The best of the latter were Odontoglossum Georgius Rex, a grand flower, O. Aquitania, O. Empress of India, O. amabile and O. eximium, present in special and very distinct varieties; O. ardentissimum xanthotes, and some other fine hybrids. Others noted were the white Trichopilia Backhouseana, Cypripedium bellatulum album and the pale rose spotted variety Queen of Spain; the unique white Cattleya Lawrenceana Mary Regina (awarded the "Davidson" Cup), the rare Cymbidium Humblotii, and C. Pauwelsii, Brasso-Cattleya Princess Elizabeth and other Brasso-Cattleyas.

Messrs. J. Cypher & Sons, Cheltenham, continued with a very good and effectively-arranged group, in which were the forms of Lælia purpurata, including the dark variety Emperor and the light form Schroderæ. High up at the back were the graceful deep red sprays of Epidendrum O'Brienianum, with fine Odontoglossum crispum, yellow Oncidium Marshallianum, rose and white Miltonia vexillaria and fine Cattleyas and Lælio-Cattleyas. Specially attractive were a batch of the emerald-green and white Cypripedium callosum Sanderæ, and C. Maudiæ, Maxillaria Sanderiana, Lælio-Cattleya Wellsiana with 11 fine flowers, L.-C. Hyeana splendens with 28 flowers, and others equally well developed, the yellow Dendrobium Thwaitesiæ Veitch's variety and well-flowered Brasso-Cattleyas being prominent features.

Messrs. Sander & Sons, St. Albans, had a superb group of great extent and containing great variety, both in new hybrids and in rare and curious species, which were grouped at intervals along the front of the arrangement. The centre and side elevations were carried up in irregular cones, the centre at the back being of fine forms of Cymbidium Pauwelsii, the brightest

and most distinct being the variety Primulinum, and C. Gottianum, with erect spikes of clear ivory-white flowers tinged with rose, the form named bellissimum being the best. The side arrangements were mainly of their showy forms and hybrids of Miltonia vexillaria, M. Bleuana (Beranck's variety being a charming large white), and a grand lot of Odontoglossums, O. crispum excelsior being a superb large white form, and the home-raised O. crispum finely marked. Among Cattleyas, C. Mossiæ Imperatrix was a fine dark form; C. Mendelii Lady of the Lake, a very large white with ample magenta-rose lip. Mingled with the brightly-coloured kinds the slender sprays of the true old Phalænopsis amabilis showed its large white flowers to advantage, and of new hybrids a clump of the charming hybrids of Miltonia Warscewiczii raised by the firm, and including Odontonia St. Alban, O. Roger Sander, O. Delaresseæ Solum, a very interesting cross with O. crispum Solum, and showing the dark lip of that variety, and the pretty O. Lælia Sander (see awards). Specially noted were Odontoglossum crispum Lord Grenfell, a handsomely blotched form, Brasso-Cattleya Mirabilis (C. Mendelii × B.-C. Mrs. J. Leemann), Dendrobium Leeanum ampliatum, a new form of the fine natural hybrid of D. Phalænopsis, Cattleya Susannæ Hye de Crom var. citrina, the largest pure white form with citron-yellow centre to the lip; Miltonia vexillaria Northlight, a large white flower with a rosy flush; Brasso-Cattleya Mrs. J. Loemann var. Diadem, cowslip yellow, with rose markings in the lip. For others see awards. Among the species were the rare Oncidium Sanderæ, the yellow form of the Butterfly Orchid.



THE CHELSEA SHOW.

Fig. 150.—ODONTOGLOSSUM EXIMIUM ARMSTRONGIÆ; FLOWERS DARK VIOLET WITH WHITE MARGINS.

(See Orchid Awards p. 351.)

E. H. Davidson, Esq., Twyford, staged a neat group of good things, specially fine being some excellent forms of Lælio-Cattleya Aphrodite, some fine Odontoglossum crispum, including Luciani and other blotched forms, and a very handsome xanthotes. Good scarlet Odontiodas, Phalænopsis amabilis, good Cattlevas, including a very pretty blush-white C. Mendelii, and at intervals along the front some clear white Trichopilia Backhouseana.

Mr. Sidney Flory, Orchid Nursery, Twickenham, followed with a group of excellent Odontoglossums, Cattleyas, and Lælias, including the white L. purpurata Queen Alexandra. A rare feature in the group was made by a collection of handsome-leaved Anæctochili, which seem to be growing very vigorously, and included two specimens of the green and silver A. (Macodes) Petola and about 20 Ceylon Anæctochili varying from deep olive-green, with a few red lines, to green with a beautiful recticulation of gold and copper-red.

Messrs. Hassall & Co., Southgate, staged an effective group, in which Miltonia vexillaria, Renanthera Imschootiana and Odontoglossums, both species and hybrids, were well represented. Also good Odontiodas, Cattleya Skinneri alba, with 22 flowers; C. Dusseldorfei Undine, 5 flowers; a clear white C. Schroderæ alba; various brightly coloured Lælio-Cattleyas, including very fine copper-yellow L.-C. G. S. Ball.

Sir Jeremiah Colman, Bart., Gatton Park, Reigate (gr. Mr. Collier), completed the side with a bright arrangement of his finely-grown red Odontiodas, including a fine O. Vuylstekeæ, with two many-branched spikes; O. Gatton Queen, of a soft rosy-scarlet; and the brilliant O. Bradshawiæ Lady Colman. A pretty display of Cattleya William Murray, the blue Dendrobium Victoria Regina, some handsome Odontoglossums, O. Queen of Gatton, which received an Award of Merit March 19, 1912, now justly securing a First-class Certificate, a similar award going to L.-C. Frederic Boyle "Gatton variety."

Messrs. Armstrong & Brown, Tunbridge Wells, continuing on the other side, staged one of the best and most interesting groups, replete with good things and excellently well arranged. The arrangement was carried well up at the back, the tall Kentia Palms having among them white Phalænopsis shedding their sprays over the scarlet Odontiodas, gorgeously coloured Lælio-Cattleyas and Brasso-Cattleyas, in the centre being a fine, white-lipped form of Miltonia Bleuana. Besides these were a batch of Lælio-Cattleya Hyeana splendens, white C. Skinneri alba, and deep rose-coloured Miltonia vexillaria, with plants of the rare M. v. Memoria G. D. Owen, with rich, vinous-crimson mask on the lip, and the other extreme M. v. Lambeauiana, almost wholly clear white. M. v. gigantea, M. Bleuana, M. Hyeana, and M. St. Andre were also arranged with them. Where all were so uniformly good it is only possible to enumerate a few of the most striking, for some of which see awards. Brasso-Cattleya Shilliana was a beautiful silver-white flower flushed with rose; the forms of Lælio-Cattleya Fascinator of varying tints and all of excellent shape; the Orchidhurst strain of L.-C. Aphrodite, fine in size and colour, and other large-flowered Lælio-Cattleyas very effective, some being of new tints. Brilliant scarlet and red and white was given by about 100 Odontiodas in great variety, the crowning success being O. Chantecleer Orchidhurst variety, which was unanimously voted a First-class Certificate. Elevated at the back were two fine examples of Cœlogne Dayana, with long, drooping racemes of flowers, beneath which were various rose and purple coloured Brasso-Cattleyas and Brasso-Lælias and a very showy lot of Odontoglossums, the forms of O. eximium being specially good (see awards). Cattleyas were well displayed, a specimen of C. Skinneri alba having nearly 50 flowers. Cœlogyne pandurata had a large spray of 14 flowers, Dendrobium Chessingtonense had a good show of deep-yellow blooms. The plants in the group were wonderful examples of good cultivation and profuse flowering.

Mr. C. F. Waters, Balcombe, arranged a pretty group of fine varieties of Odontoglossum crispum, Miltonia vexillaria, Cattleya Mossiæ, including C. M. Reineckiana, and some good dark forms, varieties of Lycaste Skinneri, and other showy species in excellent condition.

Mr. Harry Dixon, Spencer Park Nursery, Wandsworth Common, had a group of Odontoglossums, Miltonia vexillaria, well-grown Cattleyas, Lælio-Cattleyas and Cymbidiums, in-

cluding a good specimen of C. Lowianum concolor.

Messrs. J. and A. McBean, Cooksbridge, arranged an extensive and most beautiful group in which the best forms of Odontoglossum crispum and hybrids, for which the firm is noted, were well displayed, demonstrating conclusively the reason why the best white O. crispum Alexandræ is a general favourite for decoration and for cutting. A splendid set of Cattleya Mossiæ displayed every shade of that popular Orchid, the variety Dreadnought having enormous pseudo-bulbs bearing a spike of 5 large and finely-formed flowers. Bright red Odontiodas were in great profusion, the forms of O. Charlesworthii being superb (see awards). Some very large O. Lambeauana and O. Vuylstekeæ were also noted. Among hybrid Odontoglossums O. Clytemnestra was a large, clear white, densely spotted with purple; O. ardentissimum Agnes, an extraordinary large white, with some violet spots on the lip, O. amabile Blanche, very distinct. Others noted were a good white Cattleya Susannæ Hye de Crom, C. Mendelii May Queen (see awards), and a showy lot of Cymbidiums, etc.

Messrs. Stuart Low and Co., Bush Hill Park, had a very handsome group, the middle being of bright red Renanthera Imschootiana, mingled with white Phalænopsis Rimestadiana, beneath which were many good specimens of an excellent type of Cattleya Mossiæ, including several white-petalled forms. In the body of the group were arrangements of good Odontoglossums, and a very complete set of Burmese Dendrobiums, including D. Wardianum, D. crassimode, D. crystallinum, and a nearly white form; D. dixanthum, D. Brymerianum and others. Cattleya Schroderæ and C. Mendelii were also well shown, and in front were some nice plants of the yellow Oncidium concolor. A very pretty lilac-tinted natural hybrid Vanda was also shown.

Messrs. Mansell and Hatcher, Rawdon, Leeds, finished with a grand group in which most of the best things of the season were well displayed. The design had three irregular cones with concave arrangements between. Odontoglossum crispum with good Lælio-Cattleyas predominated in two sections; Renanthera Imschootiana with Miltonia vexillaria varieties in another; and at the ends the very handsome forms of Dendrobium Apollo were effective. Cattleyas were many and various, the new white C. Empress Frederick alba, which secured a First-class Certificate, taking the lead as a good novelty. Miltonia vexillaria Chelsiense was better and larger than ever shown before, and a good form; Odontoglossum crispum Royal George, and some other spotted forms were much admired; Lælio-Cattleya Fascinator, L.-C. Aphrodite, and L.-C. Hyeana splendens gave good effect, and throughout the group many uncommon plants, including a specimen of Dossinia marmorata, appeared.

W. P. Burkinshaw, Esq., Hessle, Hull (gr. Mr. Barker), showed Miltonia Bleuana Hessle variety, and a good white-petalled Cattleya Luddemanniana Schroderiana near to the variety Stanleyi.

Mr. John Evans, Manor House, Key Green, Congleton, Cheshire, sent Odontoglossum Evansiæ and O. Ruby Gem, two very handsome and finely-blotched hybrids.

M. Jules Hye de Crom, Ghent (gr. Mr. Coen), showed a fine example of his beautiful hybrid Miltonia, with large white flowers tinged with rose. The plant was similar to some of the beautiful Miltonias noted as being shown by M. Jules Hye de Crom at Ghent. The class is now becoming puzzling, as the different crosses merge into each other.

AWARDS.

First-Class Certificate.

Odontoglossum Othmarschem (*parentage unrecorded*), from Baron Bruno Schroder, The Dell, Englefield Green (gr. Mr. J. E. Shill). A superb Odontoglossum, with large flowers of fine shape, bearing over the greater part of the surface large claret-coloured blotches, the white ground appearing in thin, wavy lines.

Lælio-Cattleya Britannia Westonbirt variety (*L.-C. Canhamiana* × *C. Warscewiczii*), from Lieut.-Col. Sir Geo. L. Holford, K.C.V.O. (gr. Mr. H. G. Alexander). A fine improvement on L.-C. Canhamiana, being larger and of better form. Sepals and petals rosy-lilac, the trumpet-shaped labellum rich, claret-red.

Odontoglossum Queen of Gatton (*triumphans* × *percultum*) from Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. Collier). Probably the finest in shape of the yellow-ground Odontoglossums. Flowers large, yellow, prettily marked with red-brown.

Lælio-Cattleya Frederick Boyle "Gatton variety" (*L. anceps alba* × *C. Trianae*), from Sir Jeremiah Colman, Bart. A large blush-white, near to the variety Kerchoveæ.

Odontioda Chantecleer Orchidhurst variety (*O. Cooksoniae* × *C. Noezliana*), from Messrs. Armstrong and Brown, Orchidhurst, Tunbridge Wells. The largest and most brilliant red Odontioda, and having flowers with very broad petals.

Laelio-Cattleya Sylvia Princess Victoria Louise (*Ascania* × *Phoebe*), from Messrs. Charlesworth and Co. A model flower, with clear, canary-yellow sepals and petals, the broad lip coloured and veined rosy-crimson.

Miltonia Charlesworthii (*vexillarium Memoria G. D. Owen* × *Hyeana*), from Messrs. Charlesworth. A charming flower, practically a larger deep rose-pink G. D. Owen, with the same rich ruby mask on the lip.

Cattleya Empress Frederick alba (*Dowiana aurea* × *Mossiae Reineckiana*). A charming clear white flower, with golden-yellow lip, with lighter margin and some red lines at the base. From Messrs. Mansell and Hatcher.

Award of Merit.

Laelio-Cattleya Ganymede Holford's variety (*L. Latona* × *C. Schroderae*), from Lieut.-Col. Sir Geo. L. Holford, K.C.V.O. Flowers profusely displayed, copper-yellow, with ruby front to the lip.

Odontoglossum illustrissimum Westonbirt variety (*Lambeauianum* × *ardentissimum*), from Lieut.-Col. Sir Geo. L. Holford, K.C.V.O. Flowers large, claret coloured tipped with blush-white.

Odontoglossum eximium Armstrongiae (*ardentissimum* × *crispum blotched variety*) (see fig. 150), from Messrs. Armstrong and Brown. A charming white flower, of fine shape, the inner halves of the segments distinctly marked with dark violet colour, and the lip effectively marked in front of the crest.

Odontoglossum Georgius Rex, from Messrs. Charlesworth and Co. A grand flower, worthy to rank with the best blotched hybrids. Flowers with claret blotches, white margins.

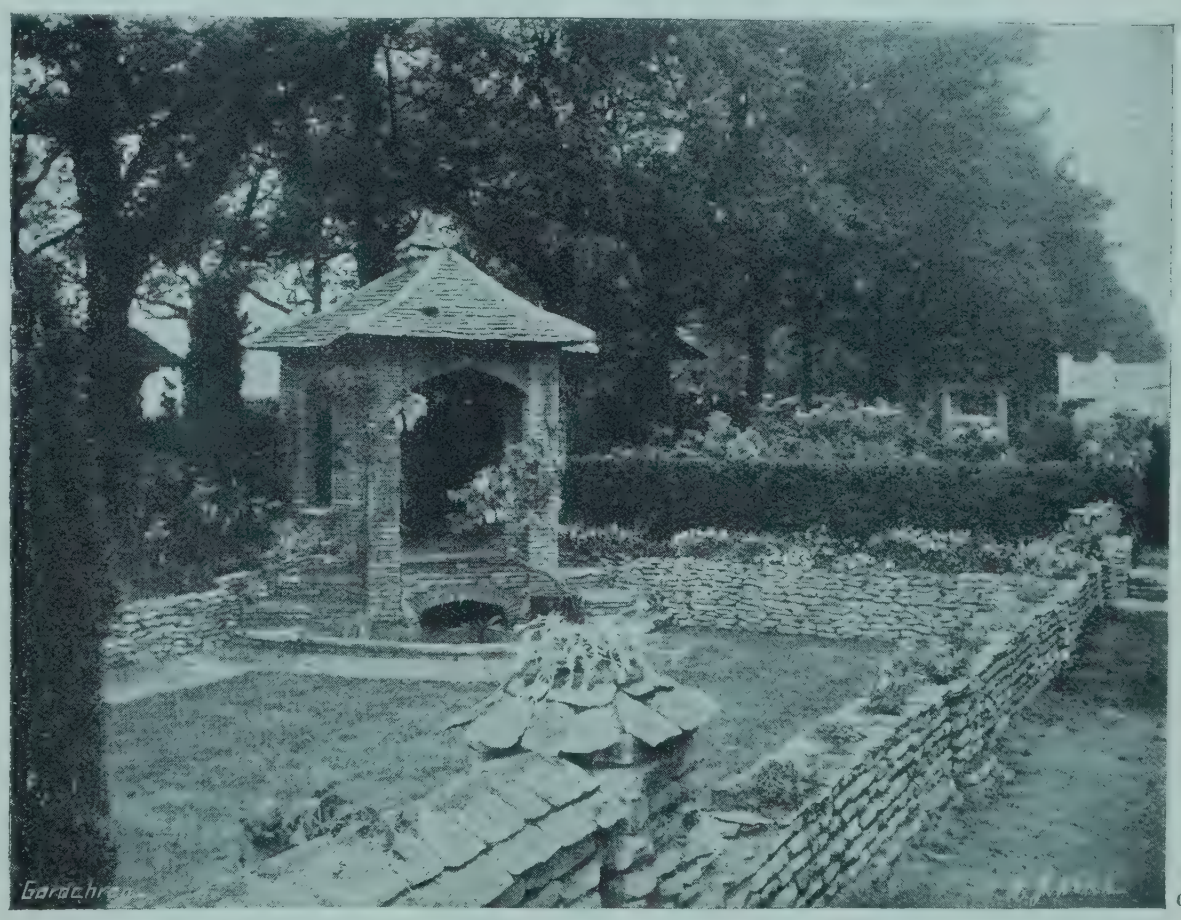
Oncidium McBeanianum (*superbiens* × *macranthum*), from Messrs. J. and A. McBean, Cooksbridge. A very interesting cross, exactly intermediate; sepals olive-brown, petals yellow spotted with red-brown.

Cattleya Mendelii May Queen, from Messrs. J. and A. McBean. A beautiful, white flower, with deep, mauve-purple front to the lip.

Odontioda Charlesworthii Perfection (*O. Harryanum* × *C. Noezliana*), from Messrs. J. and A. McBean. Flower large and of perfect form, deep glowing red.

Cymbidium Gottianum superbum (*eburneum* × *insigne*), from Messrs. J. and A. McBean. Flowers large, on erect spikes, white slightly tinged with pink.

Brasso-Laelio Cattleya excelsior (*L.-C. Geo. Woodhams* × *B. Digbyana*), from Messrs. Armstrong and Brown. Of good shape and very distinct in colour, the lip being dark claret-crimson with some fine yellow lines at the base. Petals rose-coloured.



THE CHELSEA SHOW.

Fig. 151.—sunken garden exhibited by messrs. wallace and co.

Brasso-Cattleya Vilmoriniana variety Etna, from Messrs. Sander and Sons, St. Albans. A very fine flower, with rose-coloured sepals and petals white at the base, and well-displayed fringed labellum.

Odontonia Laelia Sander (*Miltonia Warscewiczii* × *Odontoglossum amabile*), from Messrs. Sander and Sons. The prettiest of the five very pretty and highly decorative hybrids of Miltonia Warscewiczii shown by Messrs. Sander. The flowers are freely produced, of good size, and handsomely blotched with red, the broad labellum having a distinct blush-white front.

Oncidioda Cooksoniae illustris (*Oncidium macranthum* × *Cochlioda Noezliana*), from Messrs. Sander and Sons. The best yet shown. Flowers large, well-formed, uniformly coloured deep scarlet.

Odontioda chelseiensis variety St. Fuscien (*Cochlioda vulcanica* × *Odontoglossum crispum*), from M. H. Graire, Amiens. Flowers rosy-lilac and very effective. The type was raised by Messrs. William Bull and Sons, and illustrated in these pages in 1909.

Cultural Commendation

To Mr. H. G. Alexander, orchid grower to Lieut.-Col. Sir Geo. L. Holford, K.C.V.O., for a fine specimen of Miltonia vexillaria Snowflake with 15 spikes, 85 flowers; and for M. vexillaria virginale, with 125 l[illegible]

To Mr. H. G. ALEXANDER for a grand specimen of Cattleya Mossiæ Mahomet.

To Mr. J. DAVIS, gr. to J. Gurney Fowler, Esq., for a noble specimen of Sobralia macrantha alba, with a profusion of large, white flowers.

Floral Committee.

Present :—H. B. May, Esq. (in the chair), Messrs. C. Blick, W. P. Thomson, J. Dickson, Rev. F. Page Roberts, W. Cuthbertson, G. Reuthe, C. Dixon, W. J. James, H. J. Jones, J. Green, R. C. R. Nevill, C. T. Druery, W. J. Bean, T. Stevenson, J. Barr, J. W. Moorman, G. Gordon, C. E. Shea, and R. C. Notcutt.

Stove Plants.

Messrs. JAMES VEITCH AND SONS, Chelsea, arranged a magnificent group of stove plants, in which fine foliage species predominated, but flowering plants of Medinilla magnifica, Gloriosa Rothschildiana, Kalanchoe flammea, the vivid colouring of many Anthurium spathes, and several batches of Orchids in bloom sufficed to add brightness to the collection. In this very large group tall, slender Palms, rising high above the specimen plants, served to add grace and lightness.

Messrs. JOHN PEED AND SON, West Norwood, displayed a very large circular group of excellent Caladiums. The leaves of many kinds were very transparent and delicate-looking, and contrasted well with those which have more substance. Of the former type Marie Harcourt, Rio de Janeiro, King George V. and Silver Queen are a selection of the most noteworthy varieties.

Mr. L. R. RUSSELL, Richmond, exhibited a group of fine-foliaged stove plants, in which nearly each individual was a specimen. Anthurium regale, A. Veitchii, Alocacia mortfontanensis, A. argyrea and Dracæna Victoria are the names of some of the more noteworthy specimens. Opposite this large group Mr. Russell arranged a brilliant display of Salvia Glory of Zurich and an excellent collection of Caladiums.

Roses.

The enormous masses of the Polyantha Roses in Mr. GEORGE PRINCE'S group of Roses provided a splendid blaze of colour. Hiawatha, Dorothy Perkins, Blush Rambler and similar varieties were loaded with blossoms.

Messrs. WM. PAUL AND SON, Waltham Cross, set up a most imposing array of Roses. Tall standards and pillars of Tausendschön, American Pillar, Blush Rambler, Coquina and many others towered high above the base, which was furnished with dwarf pot plants. Of the dwarf Roses, Mrs. Charles Hunter, Entente Cordiale, Juliet, Rayon d'Or and Marcella were especially good.

Messrs. STUART LOW AND CO., Enfield, showed many excellent pot Roses arranged in half-moon formation. The tall pillars of Excelsa, Hiawatha and other varieties were freely bloomed, and in the surrounding stands of cut blooms such varieties as Mrs. G. Shawyer, Lady Hillingdon and Joseph Hill added to the attraction.

New Roses have a very great fascination for the visitors to flower shows, and at one end of Messrs. B. R. CANT & SON'S, exhibit, which was devoted to a collection of new varieties, there was a constant crowd of visitors. Besides the varieties which received Awards of Merit, Verna Mackay, a crushed strawberry-tinted yellow H. T. Rose, and Mrs. Wemyss Quin, a rich yellow variety, received much attention. The remainder, and larger portion, of the group contained many floriferous Polyantha and Austrian Briar Roses in pots, as well as a large number of cut blooms of the large flowered varieties.

Standard plants of a very sweetly-scented Hybrid Briar Rose, said to be very early flowering and quite free from mildew, were shown by MM. A. ROBICHON ET FILS, Orleans, France. This yellow-flowered hybrid gives promise of proving a good garden Rose.

The smaller exhibit of Messrs. A. J. and C. ALLEN, Norwich, contained fresh examples of Madame Abel Chatenay, Sunburst, Lady Hillingdon and similar useful varieties.

Messrs. G. MOUNT AND SONS, Canterbury, displayed exceedingly good Roses in a square group. The outstanding features were the large stands of Ulrich Brunner, Mrs. John Laing and Frau Karl Druschki.

A long row of tall, slender pillar varieties (the indispensable Hiawatha, Minnehaha, Excelsa, Dorothy Perkins and the like), with plenty of bloom, attracted attention to Messrs. FRANK CANT AND CO.'S group of Roses, which contained a large proportion of pot plants. Amongst such popular varieties as Mrs. John Laing, Ulrich Brunner and Catherine Mermet, the more recently introduced sorts, such as George Dickson, Arthur R. Goodwin, and Countess of Shaftesbury, occupied prominent positions.

A stately little group of Roses, with elegant weeping Polyantha standards, was arranged by Mr. CHARLES TURNER, Slough.

Messrs. WM. CUTBUSH AND SON, Highgate, employed only Polyantha varieties in their charming group of Roses. The groundwork was of dwarf floriferous little plants, and the various standards were placed at irregular but effective intervals.

Messrs. HOBBIES, LTD., Dereham, showed a large number of Roses. A pergola, covered with Polyantha varieties, had a delightful effect, but the remainder of the exhibit suffered from the want of sufficient space.

Messrs. PAUL AND SONS, Cheshunt, featured splendid weeping standard Wichuraiana Roses; the long flower-laden sprays hanging over the larger flowered sorts presented a charming spectacle.

Messrs. G. BECKWITH & SON, Hoddesdon, showed a large group of the Rose Madame Edouard Herriott which received a Gold Medal at the N.R.S. Spring Show. The variety Willowmere and such Polyantha varieties as Le Ponceau and Papa Henry were also splendidly shown.

Carnations.

Messrs. YOUNG AND CO., Cheltenham, arranged a splendid exhibit of Carnations in large stands, rising from a groundwork of moss, greenhouse Ferns and Asparagus. The centre stand, some 9 feet high, contained probably 200 blooms of Cecilia; in the comparatively smaller but really large stands, such varieties as Hon. Lady Neeld, Winsor, Mrs. Raphael and Carola were lavishly employed.

Mr. C. ENGELMANN, Saffron Walden, contributed a wonderfully fine exhibit of Carnations. The centre of the exhibit was a veritable hedge, some 10 feet high, of blooms, the varieties used being Rosa. Lady Northcliffe, Sunstar, etc. Stands of Beacon, Carola and the like rose above a groundwork of pink and white flowered varieties.

Mr. BERTIE BELL, Guernsey, attractively displayed cut Carnations of such varieties as White Wonder, R. F. Felton and Mrs. C. W. Ward.

Messrs. ALLWOOD BROS., Hayward's Heath, featured their delightfully scented Carnation, Mary Allwood, with smaller vases of Empire Day, Carola and White Wonder in a praiseworthy collection.

Messrs. WELLS AND CO., Merstham, also showed bright and fresh Carnation blooms.

Mr. CHARLES BLICK, Hayes, Kent, arranged Carnations with Asparagus Sprengeri.

Mr. J. D. WEBSTER, Chichester, had a group of excellent Richardia Pentlandii in the centre of his Carnation exhibit. This rich golden "Arum" has rarely been shown so finely. The charming "Malmaison" Carnation, Lady Coventry, presents no cultural difficulties to this exhibitor.

The praiseworthy collection of cut Carnations shown by Mr. A. F. DUTTON, Iver, Bucks, was rendered discordant by the bows of ribbon attached to the basket handles. Otherwise the group would have compelled unstinted admiration.

Mr. S. MORTIMER, Farnham, also showed Carnations.

Messrs. STUART LOW & Co., Enfield, showed excellent Carnations on large stands arranged on a raised circular foundation. The "Malmaison" varieties, Princess of Wales, Mrs. C. F. Raphael, and others, were especially good.

Mr. H. BURNETT, Guernsey, showed a collection of cut Carnations fully equal in merit to his fine exhibits at the R.H.S. meetings during the past six months.

LEOPOLD DE ROTHSCHILD, Esq., Ascott, Leighton Buzzard (gr. Mr. J. Jennings), effectively arranged a large group of Souvenir de la Malmaison Carnations, with the richly-coloured Statice profusa. Three groups of the old Blush Malmaison, which is now becoming rare, evidently presents no difficulty to Mr. Jennings, and the variety Princess of Wales was also shown splendidly.

The large circular group of Carnations arranged by Messrs. WM. CUTBUSH AND SON, Highgate, was one of the most graceful and attractive arrangements in the large tent. A large number of blooms of both the "Malmaison" and the Tree varieties were used in an exceedingly tasteful manner.

Begonias.

There seems to be no limit to the size of the double-flowered, tuberous Begonias, for which Messrs. BLACKMORE AND LANGDON are famed. From Bath this firm brought each bloom carefully wrapped in cotton wool, magnificent plants bearing flowers which in point of size would rival the finest Camellia. All possible shades of colour were represented, and although the flowers were from 4 to 6 inches across, there was not the slightest trace of coarseness. A few baskets contained such graceful varieties as Mrs. Bowers and Lena.

Messrs. W. T. WARE AND CO., Feltham, also showed excellent double-flowered tuberous Begonias, and although their arrangement was not very attractive it served to show off the size and quality of the blooms.

Pelargoniums

In point of numbers Miss TROYTE-BULLOCK, North Coker House, Yeovil (gr. Mr. E. Mitchell) eclipsed the other exhibitors of Cape Pelargoniums, for her collection contained 140 kinds. Beside the well-known types there were such uncommon forms as P. tetragonum, with fleshy five-sided stems and very few leaves, and P. rutæfolium, an appropriately-named species.

Messrs. GODFREY AND SON, Exmouth, staged select varieties of scented-leaved Pelargoniums, with an exceedingly good collection of show and fancy varieties. Sturdy, well-flowered little examples of Veronica Hulkeana, Olearia stellata, Lilacs and Oriental Poppies also formed a part of this exhibit.

Specimen, scented-leaved Pelargoniums were shown by the Hon. VICARY GIBBS, Aldenham House, Aldenham (gr. Mr. E. Beckett), which received unstinted admiration from the visitors.

A. P. BRANDT, Esq., Bletchingley Castle, Surrey (gr. Mr. J. W. Barks), contributed an excellent collection of show and fancy Pelargoniums.

Mr. CHAS. TURNER, Slough, contributed many attractive plants of show and fancy Pelargoniums.

Messrs. JARMAN AND CO., Chard, displayed trusses of the pretty little variety, Mrs. Martin, and several good Ivy-leaved forms, with their larger-flowered single and double zonal varieties.

Mr. VINCENT SLADE, Taunton, showed many varieties of zonal-leaved Pelargoniums.

The excellent and very interesting display of Cape Pelargoniums in 102 varieties shown by Mrs. ROLLS-HOARE, West Grinstead Park, Horsham (gr. Mr. J. W. Seden), diffused a very refreshing fragrance. Besides this agreeable characteristic, such sorts as Rollinson's Unique, P. molle, P. cucullatum fl. pl., Scarlet Unique, Lucerne, and Miss G. Osborne would be worth growing if it were only for their blooms.

Messrs. H. J. JONES, LTD., Lewisham, filled a large square bed with splendid zonal Pelargoniums.

Calceolarias.

The Rev. H. BUCKSTON, Sutton Hall, Derby (gr. Mr. A. Shambrook) exhibited large plants of an excellent strain of herbaceous Calceolarias.

The three hybrid Calceolarias shown by Messrs. ROBERT VEITCH AND SON, Exeter, which were so admired at last year's International Show, again illustrated their value as graceful bedding plants. The variety Bronze Age, flanked by Golden Glory and the taller white-flowered C. Veitchii, were exceedingly brilliant. Their strain of greenhouse Calceolarias was also well shown.

Sweet Peas.

The novelty, "Anglian Royalty," a maroon and claret-shaded variety, was the chief feature of Messrs. E. W. KING AND CO.'S, Coggeshall, exhibit of Sweet Peas. Other attractive varie-

ties were Anglian Blue, Rosabelle, Prince George, Anglian Orange, and Queen Mary.

Messrs. Sutton and Sons' Sweet Pea exhibit was delightfully staged, and showed how easily an artistic arrangement can be effected without crudely massing the blooms. The centre stand of Dorothy Usher and the shields of Sutton's Royal Rose and Helen Grosvenor were charming.

The double-fronted stand of Sweet Peas tastefully arranged by Messrs. Dobbie and Co., Edinburgh, contained blooms nearly equal to the best summer flowers. As though to show how such fine blooms are grown, the centre of the stand was filled with the growing plants. These were all single-stemmed specimens, with rich, healthy but not gross, foliage, trained at 4 inches apart. The most attractive varieties were May Campbell, Rosabelle, Melba, Peach Blossom, Lady Miller, Mrs. McIlwrick, Elsie Herbert, and Inspector.

Robert Sydenham, Limited, Birmingham, exhibited vases of Barbara, Maud Holmes, Rosabelle, and Hercules in their collection of Sweet Peas.

Tulips.

Messrs. Hogg & Robertson, Ltd., 22, Mary Street, Dublin, staged a group of Tulips remarkable in an indifferent season for their size, purity and freedom from trace of spotting. Massenet, Arizona and other Darwins were very fine, whilst the newer May-flowering and Breeder Tulips were exceptionally good. Moonlight, Hammer Hales, Scotia, Heliotrope, Quaintness were noted with the better-known Dom Pedro, Turenne and Inglescombe Yellow and Inglescombe Pink.

Messrs. R. H. Bath, Ltd., Floral Farms, Wisbech, staged a very pretty oval group of Tulips broken by five columns of rambling Roses. The colours had been arranged with more than usual care, and there were fine vases of Louis XIV., Miss Willmott, Bouton d'Or, Massenet and other varieties. Pans of Violas formed an edging.

Messrs. Sutton and Sons, Reading, staged a showy bank of Tulips over a groundwork of Maidenhair Fern. Noticeably fine were Canossa, La Merveille, Massenet, Dom Pedro, Inglescombe Yellow, Orange Globe and Wilberforce.

Messrs. Alex. Dickson and Sons, Ltd., had one of the most beautiful exhibits of Tulips, both in quality and arrangement. We noticed particularly fine blooms of Sensation, Suzon, Mrs. Stanley, Rev. Harper Crewe, Orange King and Tara. Low staging was used, and a bold arrangement of the flowers made with large glass vases and bamboo stands. An unusual but very telling foil was made to the flowers by the free use of the broad leaves of Phragmitis communis.

Messrs. Jas. Veitch and Sons, Chelsea, showed a varied collection of Tulips in fine condition. The bold masses of Lucifer, Louise de la Vallière, Mr. Farncombe Sanders and Clara Butt were outstandingly good.

Messrs. Barrie and Brown, 39, King William Street, London Bridge, staged a small collection of Tulips with a few Spanish Irises and Roses.

Messrs. Barr and Sons, Covent Garden, had a brilliant group of Tulips and bulbous plants. Moonlight, Velvet King, Louis XIV., Goldfinder and Mrs. Kerrell were conspicuous in the Tulips, and Blushing Bride, Ackermannii and Peach Blossom among the Gladioli. Giving stronger patches of colour to the group were a few good vases of Ixias and Spanish Irises.

Messrs. J. Jefferies and Son, Ltd., Cirencester, arranged a circular group of May-flowering Tulips, crowned with Anthony Roozen, and with Rev. H. Ewbank, Yellow Perfection, Hecla, Bronze Queen and Turenne finding prominent places in it. Variegated grasses and Adiantum Ferns were used as a foil to the richer colours of the Tulips

Messrs. Cartwright and Goodwin, Kidderminster, staged a clean and vigorous batch of Tulips. Whistler, Suzon, Bronze Queen, Faerie Queen, and Clara Butt were the more striking varieties in a considerable collection. Isolepis gracilis was used as a groundwork.

Mr. Christopher Bourne, Bletchley, staged a collection of May-flowering Tulips. We noted Hammer Hales, Old Times, Orange King, Mrs. W. O. Wolseley, and Walter T. Ware as being particularly fine.

Mr. C. W. Needham, Kelmscott, Hale, Cheshire, showed a very choice collection of English florists' Tulips in vases, with a vase or two of Clara Butt and Inglescombe Yellow, admitted for their fine colours.

Messrs. Dobbie and Co., Edinburgh, showed some very fine Tulips grown in their Essex nursery, which were noticeably clean and fresh. Prof. Michael Foster, Shandon Bells, Margaret, Bouton d'Or, and Prince of Orange were some of the showiest sorts included. A large collection of Violas was also staged by this firm.

great advance the cultivator has made with this plant. Herbaceous Calceolarias of gorgeous colouring, Cinerarias, double-flowered tuberous Begonias, red and white East Lothian Stocks, hybrid Nemesias and a large group of a compact strain of Schizanthus, with the taller and brighter-flowered S. retusus varieties, all helped to make a memorable exhibit.

The inception and arrangement of Messrs. Carter and Co.'s exhibit is deserving of the highest praise. The design of the Raynes Park



THE CHELSEA SHOW.

Fig. 152.—WISTARIA EXHIBITED BY MESSRS. PIPERS.

Miscellaneous Indoor Flowering Plants.

The admirable arrangement of Messrs. Sutton and Son's exhibit of greenhouse plants permitted of a leisurely and ample inspection of the splendid plants which it contained. A central stand, surmounted by a tall Palm, was filled with Clarkia Scarlet Beauty, Firefly and other varieties. The corner groups were pleasantly broken, and contained excellent plants. Primula obconica grandiflora in many charming shades of colour illustrated the exhibit was in the form of a large central circle, surrounded by a series of smaller circles, linked by triangles and squares; the last-named were filled with seedling grasses closely clipped as on small lawns. The central feature was filled with a fine collection of "cactus" Cinerarias of rich colours. The secondary groups were all [illegible] of Gloxinias, Schizanthus, Stocks, Petunias, large-flowered Cinerarias and herbaceous Calceolarias. It was altogether a charming exhibit of excellent plants.

Messrs. John Peed and Son, West Norwood,

exhibited a large number of plants of a giant strain of Streptocarpus. In this very meritorious exhibit the pink shades of colour were especially fine.

Large plants of Polypodium Mandaianum and Alocacia Lassalliana, a very tall aroid, with large much-divided leaves, surmounted a number of plants of Calceolaria Jersey Beauty, a hybrid between the shrubby and the herbaceous types, shown by Mr. W. A. MANDA, St. Albans.

Four large, semi-circular groups, composed of star Cinerarias, a splendid strain of Schizanthus compacta, Webb's Superb Calceolarias, and a group of tuberous Begonias, B. Gloire de Lorraine and Gloxinias, effectively massed, were the principal features of Messrs. WEBB AND SON'S exhibit. In lesser quantities Primula obconica varieties and Hydrangea Madame Mouillère, surrounded by dwarf plants of Impatiens Sultanii, were very effective.

The chief feature of Messrs. H. CANNELL AND SON'S exhibit was a delightful arrangement of Calceolarias. Show and fancy Pelargoniums and Schizanthus Wisetonensis were also very attractive.

The stand of Hippeastrums arranged by Messrs. ROBT. KER AND SONS, Liverpool, included choice varieties, embracing a wide range of soft, pleasing shades of colour. Pink Beauty is a charming variety, and was well set off by the richer-toned Beacon, which adjoined Brilliantissima, the deepest and richest-coloured of all. Such varieties as Lord Roberts (deep orange-yellow) and Ophir superba (pale buff) seemed to indicate that a yellow Hippeastrum will not prove an impossibility. Rosy May, a variety which bore two stout spikes, has very uncommon shades of pink.

Messrs. JAMES VEITCH AND SON'S exhibit of greenhouse plants simulated a small conservatory with two broad side-stages. Trained Fuchsias of the varieties General Grenfell, Mrs. Marshall, Improved Rose of Castile, and others, amply flowered, met overhead, and on either side were arranged a great variety of dwarfer, flowering plants. At one end a batch of Streptocarpus illustrated the enormous improvement which has been effected with this genus; the blue-flowered varieties were probably the best; not only is the colour good and clear, but their effect is heightened by the white throats which are so desirable. Hippeastrum hybrids, a wide range of Cinerarias, Gloxinias, with erect richly-coloured flowers, and the deep blue Exacum macranthum were also included in this fine exhibit.

Mrs. CLAUDE BARRETT, Hatton Court, Castlethorpe (gr. Mr. C. W. Lane), arranged exceedingly good Schizanthus hybrid in the form of a tall pyramid.

Mrs. V. A. LITKIE, Clarefield, Maidenhead (gr. Mr. W. Hulburt), contributed an exceedingly pleasing circular group of Calceolarias. The centre was filled with excellent plants of C. Clibranii surrounded by a row of the new variety, Clarefield Gem.

Messrs. WATKINS & SIMPSON, Tavistock Street, London, showed good strains of Schizanthus wisetonensis, Nemesia compacta Blue Gem, Clarkias, Antirrhinums and various half-hardy annuals.

Mr. A. J. A. BRUCE, Manchester, filled a large ground space with a splendid collection of Saracenias, arranged in an exceedingly tasteful manner of training fruit trees, including cup-the group a light appearance, and occasional flowering plants of Heeria elegans added the needed touch of colour.

Messrs. R. H. BATH, LTD., Wisbech, showed Carnations, the Polyantha Rose Jessie, Pelargoniums and Violas.

Rhododendrons.

Hardy Rhododendrons with large trusses of brilliant flowers were exhibited by Messrs. JOHN WATERER AND SONS, Bagshot. The most striking feature of this magnificent exhibit was the large number of the variety Alice, which at a little distance might easily be mistaken for Pink Pearl, though on closer inspection the flowers are a trifle smaller, but possess more warmth of colour. Pink Pearl was also well shown, and such brightly coloured varieties as Michael Waterer, Prometheus and Mrs. William Bovill were dazzling.

Messrs. FLETCHER BROS., Chertsey, displayed a large group of ponticum hybrid Rhododendrons in full bloom. Amongst the newer varieties Helen Paul, bright pink, with a delicate perfume, Profusion and H.M. Arderne are noteworthy as being three grand pink-flowered hybrids.

Messrs. GEO. BUNYARD AND CO., LTD., Maidstone, arranged a small group of hardy Rhododendrons.

The two large groups of Mollis and Ghent Azaleas arranged by Messrs. R. AND G. CUTHBERT, Southgate, literally glowed with warm colours. The hybrid forms (mollis × pontica) are very decorative.

The only exhibit of trained plants of Azalea indica varieties was from Mr. CHARLES TURNER, Slough, who also showed beautiful "Malmaison" Carnations.

Shrubs.

Messrs. JAMES VEITCH AND SONS' group of new Japanese shrubs contained in Lonicera tragophylla, which received an Award of Merit, a valuable hardy species. Viburnum Henryi and V. Davidii are two uncommon-looking shrubs. Staphylea holocarpa is quite distinct in foliage from the commoner kinds. Dipelta ventricosa and the enormous-leaved Hydrangea Sargentii were also displayed.

In a group largely composed of Rhododendron Pink Pearl, other hybrids and Azalea pontica varieties, there were several standards of Lonicera belgica, which bears unusually sweet-scented flowers, Ceanothus Veitchianus, Rosa Hugonis and various "Syringas" (Philadelphus varieties).

The table of rare flowering shrubs exhibited by Mr. G. REUTHE, Keston, contained many uncommon Rhododendrons, sprays of vivid scarlet Embothrium coccineum, Brooms, Heathers and Daphnes. At one end there was a collection of interesting hardy terrestrial Orchids.

Messrs. W. and J. BROWN, Peterborough, showed a group of Lilacs, with a few pot Roses, Pinks and Gaillardias.

Messrs. BARR AND SONS, Covent Garden, filled a large square space with dwarfed Japanese trees. As usual, the examples, only a couple of feet high, reproduced in miniature the form and character of the normal tree, and declared to be over 100 years old, excited the wonder of many visitors. Several little collections in one vase of Cryptomeria japonica, Cupressus obtusa, C. thyoides, a Box and a Juniper, as well as a Maple were also very interesting. The young foliage on dwarfed specimens of Acer sanguineum had a fascinating delicacy of colour.

The collection of hardy shrubs displayed by Messrs. WM. PAUL AND SON, Waltham Cross, in which hybrid Rhododendrons, various Brooms, Lilacs and standard Lonicera fuchsioides were intermingled, was very effective. The major portion was composed of the bright Pink Pearl Rhododendron. In another place Messrs. PAUL arranged an attractive group of Azaleas.

Messrs. PAUL AND SON, Cheshunt, had a unique collection of cut Lilac sprays. The varieties with purplish-maroon shades of colour, Souvenir de C. Spathe, L'Oncle Tom (singles), and Charles Joy (double), were very attractive. The best of the double-flowered lilac-coloured sorts was Belle de Nancy.

Messrs. PIPER'S exhibit of Wisterias was one of the most interesting in the show. To those only acquainted with the ordinary types of this popular climbing shrub, the many forms of W. chinensis and multiguga came almost in the light of a revelation. Many of the specimens, which were planted in vases imported from China, were apparently of great age, but still very floriferous. The shades of colour ranged from a large-flowered pure white variety through pale heliotrope-tinted, to dark parti-coloured purple shades. In the grounds Messrs. PIPER showed standard Bays and an exceedingly large collection of topiary examples of excellent training.

Topiary work was also shown by Messrs. CUTBUSH and by Mr. CARLTON-WHITE, London.

Hybrid Brooms, such as Cytisus Butterfly, C. purpureus incarnatus, C. Daisy Bell, and many species were excellently shown in Mr. R. C. NOTCUTT'S group of hardy shrubs. Many Lilacs, Rhododendrons, Japanese Acers, etc., helped to make an attractive display.

The vivid, strange-looking flowers of Metrosideros floribunda on tall standards were the principal feature of Messrs. STUART LOW & Co.'s interesting group of miscellaneous plants: Boronia fastigiata, Leptospernum scoparium and the bright variety Nichollii, tall plants of Acacia pulchella, and an attractive batch of Gerbera Jamesonii hybrids were also shown.

The great variety of form and colour now available in the Japanese Maples was amply illustrated in the very large group exhibited by Messrs. W. FROMOW & SONS, Chiswick.

In the grounds, Mr. L. R. RUSSELL planted a large bed with a good selection of flowering shrubs, and another exhibit was composed of the tree and bush Ivies which he grows so well.

Messrs. W. H. ROGERS AND SON, LTD., Bassett, Southampton, arranged an interesting group of Alpines and mountain shrubs notable for its richness in ericaceous peat-loving plants, such as Vaccinium Mortinia, Azalea rosæflora, Ledums and Gaultherias.

The large specimens of Japanese Maples in the collection of Messrs. JOHN WATERER AND SONS, Bagshot, were splendid. Large round-headed examples of Acer palmatum sanguineum provided a wealth of rich colour, which intensified and glowed as the light brightened. A. p. laciniatum purpureum, in a large shrub, was also charming. For colour none equals the crushed-strawberry tint of A. p. corallinum, and its only fault is its slowness of growth. A. p. flavescens, with pale bronzy-green foliage, is one of the most graceful in habit.

Mr. CHARLES TURNER, Slough, showed many very good plants of single and double flowered Lilacs.

Messrs. GEO. JACKMAN AND SON, Woking, exhibited an excellent collection of hybrid Clematis. The most showy kinds were Nellie Moser, Fairy Queen, Ville de Lyon, Jackmanni rubra, Lord Neville and Princess of Wales. In another group Messrs. JACKMAN displayed a great variety of hardy flowering non-climbing shrubs, including an excellent bush of Kalmia latifolia.

Ferns.

Messrs. H. B. MAY AND SONS, Upper Edmonton, have on many occasions exhibited magnificent groups of stove and greenhouse Ferns, and wonderfully fine as was that at the Olympia Show, it is questionable if they have ever excelled the arrangement at this show. All forms and types were represented. The fronds varied in length from the long arched plumes of the tree Ferns and the 8 feet long fronds of Acrostichum aureum, a semi-aquatic species from the swamps of Ceylon, to those of the very un-fern-like fronds of Polypodium vaccinifolium, not an inch long. The large, dark green shield-like mass of a huge Davallia solida superba was in striking contrast to very pale green moss-like foliage of Nephrolepis exaltata Willmottæ, which received the highest award of a First-class Certificate. Rich colour was provided by the young fronds of the Peruvian Adiantum Veitchii, which does not so quickly pass to the sober green as is the case with some other similarly-favoured species. The bordering of this enchanting group of Ferns was composed largely of crested Polypodiums in a multitude of stages of crestation. In direct contrast to the cool greenness of the Fern exhibit was an adjoining group of brightly-coloured Coleus, Verbenas, and zonal-leaved Pelargoniums, also shown by Messrs. May.

The stand of stove and greenhouse Ferns exhibited by Messrs. J. HILL AND SON, Lower Edmonton, was smaller in extent, but contained many varieties. At the back, tall, round-headed tree Ferns, such as Cyathea dealbata, and an especially good Lomaria gibba, rose above the terrestrial species, of which there were some uncommon forms. Hymonodium crinitum, with broad entire fronds, which when young are densely clothed with conspicuous, brown hairs. Polypodium ramo-cristatum, and such climbing sorts as Oleandra articulata and Lygodium scandens.

Mr. AMOS PERRY, Enfield, arranged many hardy Ferns on a series of mounds, exhibiting such kinds as Polystichum angulare acutilobum laxum, P. a. divisilobum, Scolopendrium

vulgare muricatum, and S. v. undulatum cornutum.

Mr. H. N. Ellison, West Bromwich, showed various stove and greenhouse Ferns and graceful plants of Phœnix Roebelinii of a size valuable for furnishing vases.

Hardy Plants and Flowers.

Mr. J. Box, High Street, Lindfield, arranged an effective group of hardy plants. The centre piece was the dark blue of Delphinium Lamartin over the graceful white sprays of Gillenia. Anchusas were banked at either side, and there were large masses of Phlox, Primula, Genista, Iris, Trollius and Geum forming a varied groundwork to tall stands of early Gladioli and Spanish Irises.

Messrs. T. S. Ware, Ltd., Feltham, staged a large group of herbaceous plants under canvas to form a good bank, topped with Tree-Lupines and Astilbes and falling through bold clumps of Primula pulverulenta, Geum Mrs. Bradshaw, Gladioli, Pyrethrums and Welsh Poppies to an edging of Violas.

Mrs. Lloyd Edwards, Bryn Oerog, Llangollen, showed large masses of her new mossy Saxifrages, Aubretia Lloyd Edwards and Alpines.

Mr. Howard H. Crane, 4, Woodview Terrace, Highgate, N., showed Violas or "Violettas" in shallow pans of sand, relieved by young foliage of Thorn and Hornbeam.

Messrs. Storrie and Storrie, Glencarse, Perthshire, N.B., showed a very handsome strain of Cowslips and Auriculas. The pale blue shades of the latter and the large frilled whites were particularly good.

Messrs. R. Wallace and Co., Colchester, arranged a very clean-grown and varied collection of Lilies, including more than 20 species and varieties. The feature of the group was the lovely corner-pieces of L. myriophyllum, L. Krameri and L. tenuifolium Golden Gleam. L. Brownii and L. colchesterense were fine, as also were the Martagon hybrids and Thunbergianum varieties. The Calochorti were fine, whilst variety and colour were added by clumps of Astilbe Peach Blossom, A. Avalanche and early-flowering Gladioli. Verbascum Britannia was the largest-flowered variety in the show.

Messrs. Kelway and Sons, Langport, Som., staged a considerable group of Delphiniums, with a few hybrid Columbines, Lupines and Tree-Pæonies. The large white Pæony Queen Alexandra made one of the group's best features.

Messrs. Phillips and Taylor, Lily Hill Nurseries, staged an interesting collection of water and bog plants. Azolla, Typha and Aponogeton in the water led on to the Trolliuses, Funkias, Epimediums, Astilbes, Rheums and similar moisture-loving subjects on the banks.

Mr. Maurice Prichard staged a large group of border flowers under canvas. The central features were the Eremuri over Lathyrus Sibthorpii. Other lesser-known plants included Polygonum divaricatum, Kniphofia media, Libertia ixioides and Caltha monstrosa plena.

A collection of Tulips was staged by the Wargrave Hardy Plant Nursery, including good blooms of Queen Wilhelmina, MacMahon, La Merveille and Blue Flag.

Messrs. J. Forbes, Ltd., Buccleuch Nurseries, Hawick, staged a few early spikes of Delphiniums, with trusses of Phloxes and an edging of Violas. The rarer plants included a specimen of Lavatera Olbia.

Mr. W. R. Tranmer, Alma Nurseries, Cottingham, Hull, staged bedding Violas, with the flowers spread fan-shaped against Spiræa foliage.

Messrs. Thomson and Charman, 11, Adam Street, Adelphi, W.C., staged a collection of interesting Alpines and shrubs, including Helichrysum frigidum, Lewisias, Geum Borisii, Rubus deliciosus and other good plants.

Mr. Frank Lilley, St. Peters, Guernsey, showed Ixias, Sparaxis, Spanish Irises, Camassias, Iris Pavonia and other bulbous plants.

Messrs. B. Ladhams, Ltd., Shirley, Southampton, staged a small group of hardy plants on the ground. Thalictrum aquilegifolium superbum and Verbascum desiflorum in the background were good, but the close bunches of Carpentaria californica, Solanum crispum and Rehmannia angulata were hardly in keeping. The groundwork consisted of good clumps of Hutchinsia, Sedums and mossy Saxifrages.

Mr. Rea. Prichard, West Moors, near Wimborne, arranged a small group packed with rare and interesting species of Alpines. A great bed of Helichrysum bellidioides, fine masses of Campanula Stevenii nana, Erodium amœnum, Edraianthus calycinus, Sedum pilosum, Stachys corsica, Pentstemon Roezlii and the newer Lewisias and Primulas were the gems of the group.

Mr. W. Lawrenson, Yarm-on-Tees, arranged a group of new Primulas. The noteworthy plant of the group was the Yarm hybrid, derived from P. Cockburniana ♀ crossed with P. pulverulenta ♂. It makes a floriferous perennial with the boldness of P. pulverulenta in growth, and coral-red salmon shaded flowers, much paler than "Unique" and "Lissadell" hybrid, which have the same parentage. Associated with P. pulverulenta and P. japonica the effect of the hybrid was rather spoiled.

Messrs. Cunningham, Fraser & Co., Comely Bank Nurseries, Edinburgh, staged an interesting group of little-known Alpines, with a background of the rare Restio subverticillatus (tender). Saxifraga (Megasea) Delavayi was new, and among other uncommon plants shown well were Rhododendron glaucum, R. lepidotum, Euphorbia capitata, Primula Littoniana, Meconopsis sinuata latifolia, Salix reticulata and Schizocodon soldanelloides.

Messrs. Bees, Ltd., Mill Street, Liverpool, showed a pleasingly arranged group of Alpines, in which more than usual care had been taken in the contrasts and harmonies of adjacent plants. The group was full of novelties, Celmisia, Weldenia, Roscoea, Pedicularis and Potentilla, but we found the loveliest picture in the group in a mass of Daphne Cneorum over the sulphur Alyssum saxatile.

Messrs. G. Jackman and Son, Woking, staged a large oval bed of hardy flowers raised 6 feet in the centre with masses of Bamboos and Negundos. Delphiniums occupied either end, and the interesting plants included Spiraea Aruncus, Verbascums, Pæonies, Irises, Kniphofias and Thalictrum Delavayi, with dwarf plants as an edging.

Messrs. G. Bunyard and Co., Maidstone, staged a large bank of hardy flowers. The colours were finely massed, although the contours were a little formal except for the break of Eremuri in the centre. Geum, Tulipa, Lupinus, Saxifraga, Phlox, and Pæonia were the best represented genera with bold masses of Pyrethrums and Lilium umbellatum.

Mr. Amos Perry, Hardy Plant Farm, Enfield, staged an interesting collection of hardy herbaceous plants on the ground. The Tree-Pæonies formed an effective mass of colour, whilst Rheum and Kniphofia, with Pentstemon, Primula, Silene, Lithospermum, Tulips and Funkias gave variety. This exhibit included the best collection of Irises, with I. Tolmieana, I. tenax and other species, and a good selection of the Regelio-Cyclus hybrids, also the new interregna Irises. A very handsome group of hardy Ferns was staged near, especially rich in Polystichums, Lastreas and Athyriums, and with many specimens a yard in diameter.

Messrs. G. and A. Clark, Ltd., Dover, arranged a large lozenge-shaped bed of hardy plants on the ground of the tent. Eremuri were good in the centre, with bold clumps of Trollius, Pyrethrums, Irises, Poppies, Geums and Lupines. This was one of the brightest and cleanest of the herbaceous plant exhibits.

Messrs. Gunn and Sons, Olton, Warwickshire, showed interesting groups of border flowers. The early-flowering Gladioli and Spanish Iris made a pleasing background, interspersed with Saxifraga pyramidalis, Verbascums, etc., and overarching some good clumps of Viola Moseley Perfection. Circular groups were also shown on ground spaces of Phloxes and Saxifraga pyramidalis over a groundwork of Viola cornuta purpurea.

Mr. Stuart Maples, Stevenage, set up a pleasingly arranged little group of Alpines.

Mr. R. d'E. Day, Sutton Scotney, Hants, staged a varied collection of Spanish Irises.

Mr. E. C. Bowell, Cemetery Road, Cheltenham, showed a small group of Alpines in a groundwork of moss. Erodium corsicum, Androsaces, and Primulas were well represented.

Mr. G. W. Miller, Clarkson Nurseries, Wisbech, staged a small collection of herbaceous plants, including Verbascums, Pyrethrums, and Violas in variety.

Mr. James Douglas, Edenside, Great Bookham, showed in beautiful condition one hundred plants of Auriculas.

Mr. C. H. Herbert, Hazelwood Road Nurseries, Acocks Green, Birmingham, showed the garden pinks Eclipse, delicata, etc., overhung with a profusion of blooms of the perpetual flowering variety, Progress.

Messrs. Bakers, Ltd., Codsall, Wolverhampton, filled a considerable table space with interesting herbaceous and Alpine plants. Verbascum densiflorum and Geum Mrs. Bradshaw were a pleasing combination. Verbascum Caledonia showed well over the double, orange-coloured Welsh Poppy. Lithospermum intermedium, encrusted Saxifrages, Haberlea and Oxalis, and Primula Lissadell Hybrid were also represented by fine plants.

Messrs. Whitelegg and Page showed under canvas a number of Alpine Phloxes, Achilleas, and Primulas in baskets.

Mr. G. Underwood, Saffron Hill Nurseries, Leicester, showed Violas in small glass vases.

Dr. John Macwatt, Morelands, Duns, N.B., sent an interesting collection of hardy and half-hardy species of Primula, with some new double Primroses. P. muscarioides, P. Listeri, P. glutinosa, P. mollis, and other species were shown in good specimens.

Messrs. W. Artindale and Son, Nether Green, Sheffield, showed a varied group of herbaceous flowers, arranged on the ground in a large square bed, and built up to a central ridge of Acers and Spiræas. Hutchinsias, Veronicas, and mossy Saxifrages formed a neat edging to a miscellaneous collection of Tulips, early-flowering Gladioli, Poppies, Primulas, Alyssums, and Violas.

Messrs. G. Gibson and Co., Leeming Bar, Bedale, Yorks, arranged a rectangular group of herbaceous plants on the ground. In the lower portions were the mossy Saxifrages Bakeri, bathoniensis, sanguinea superba, and Myosotis Ruth Fisher, giving way towards the centre to bolder masses of Verbascum.

Messrs. Reamsbottom and Co., Geashill, King's Co., Ireland, staged a collection of double St. Brigid Anemones.

Messrs. Carter Page & Co. included in their exhibit of herbaceous flowers cut blooms of forced Dahlias of the Cactus, Collerette, and Pæony-flowered types.

Mr. J. MacDonald, Harpenden, draped the back of his stand with the dense green Agrostis stolonifera, growing on a prepared fabric. Smaller items were composed of different species of lawn grass. There were also some ornamental species, Phleum aurea striata, Molina cœrulea variegata, Dactylis glomerata variegata, etc., as well as dried herbarium specimens.

Rock-Gardens and Formal Gardens.

Mr. J. Wood, Boston Spa, who is contributing notes on the construction of rockeries to these pages, designed a large garden which by general assent was the most natural piece of rock-work ever exhibited. The stone used was a York limestone beautifully lined and weathered, and laid with such care that the whole exhibit was easily imagined to be a bit of the Yorkshire Fells bodily transported south. Shelving ledges of rock rose in easy stages from a pool at the foot to a crest clothed with Pines and dwarf shrubs at the back, and running water trickled over a rock face, winding its way down to the pool at the bottom. The planting was kept low, but had many beautiful features, whilst the colouration was most pleasing. Primula farinosa in a bed of close grass, Daphne, Ranunculus, Saxifrage and Gentian were all good. The planting, however, careful as it was, was really subordinated to the beauty of the general workmanship, its quietness only emphasised by the bolder work on either hand.

Messrs. J. Carter and Co., Raynes Park, designed a small formal garden, consisting of an upper paved court and a lower lawn. The upper garden was in shade, and had its borders planted with Primulas, Columbines, Kalmias and Irises. It held a roomy heather-roofed garden house, and had a small square pool fed by a lead Cupid fountain. The lower borders were filled with masses of Azaleas and Violas. The most pleasing feature of the group was the dry retaining wall built of a thin bedded stone which separated the court from the lower garden, and was topped with a Lilac hedge and planted with Achilleas, Saxifrages, Daphnes, etc.

From the centre of the wall a dolphin head spouted into a shallow semi-circular Lily pool, and on either side of this pool square steps rose to join above it and lead to the upper garden. The wrought-iron gates at the entrance and exit were admired, although the imitation stone piers gave a jarring note to an otherwise effective display.

Messrs. J. Piper and Son, Bishop's Road, Bayswater, using very large pieces of a light-coloured Gloucester stone, had a very bold piece of rock-work, which rather lacked good proportion. A large area was occupied by water fed by a trickle from a Pine-clad slope and crossed by stepping-stones. There were masses of Daphne, Primula, Viola, Saponaria, Saxifraga, etc., but they were seen at too great a distance to be effective against the large stone. The group included some fine old Wistarias in pots, which were effective by the waterside. Messrs. Piper also staged a small group of Alpines under canvas, in which special value was given to the Primulas.

Messrs. R. Wallace and Co., Colchester, laid out a formal sunk garden at the south end of the avenue. It was small in area, but full of well-thought-out practical details that could be carried out anywhere. A lead sundial, supporting a figure in a bed of pale blue Ixiolirions and Brodiæas, crowned the circular steps that formed the principal entrance. At the opposite end was an open high-roofed garden house built of the shallow-bedded Horsecombe facing-stone, which formed the most pleasing detail of the exhibit. It was entered on either side by circular stone steps, and looked out on to and in part arched over a small Lily pool overhung with the shrubby Wistaria brachybotrys. The borders were planted with Irises, Verbascums, Veronicas and Tulips, and the dry retaining walls had appropriate plants inserted in the crevices of the shallow stones. The formal garden was connected by a paved walk with the rock-garden, a series of bold outcrops in large pieces of a finely-weathered grey limestone from North Wales. The boldest face hid the source of a stream whose banks, clothed with Ferns, Primulas, etc., opened out at the foot to a lake edged with Epimediums, Primulas, etc. The natural lay of the stone was carefully followed, and the outcrops from the turf were effected simply and with restraint. The principal plantings included bold clumps of Euphorbia, Iberis, Daphne, Lithospermum and Viola Purple Robe, the high ground being planted with dwarf Conifers.

Messrs. J. Cheal and Sons, Crawley, Sussex, arranged a small rock-garden of Swanage stone, crossed by a depressed paved path, which gave suitable sites for Primulas, Saxifrages, Achilleas and Sedums, and with the low banks furnished with dwarf Conifers and shrubs. Near by was a formal garden with paths entering under Rose-arches in the centre of each side and meeting in the centre in an ornamental old well-head. Four curved beds around it were planted with Veronica, clipped Box and Lavender. There were also four beds of dwarf Polyantha Roses, and four specimen trained Yews in the grass emphasised the corners of the garden. A wooden screen at one side was furnished with Clematis and Roses.

The Craven Nursery Co., Clapham, York, had a pleasing little rock-garden in the open, with its formation and contours carefully divided into cliff, moraine, short turf and woodland. The collection was rich in diminutive rare Alpines, but the best effects were given by the worn grey rock face, the mass of Trilliums and the Gentians and Primulas in the grass.

Messrs. W. Cutbush and Son, Highgate Nurseries, N., constructed a rock-garden of considerable dimensions. The length of a steep rock-face was crossed by a narrow path which led over two frail bridges from the base, a peaty, boggy bottom of Trilliums, Dodecatheons, Funkias and Irises. The defect of the group was its excesses in planting, by the inclusion in a very small area of standard Brooms, Cherries, Maples, Rhododendrons, Wistaria and Weeping Birch, with Eremuri, Lilies and other plants.

Messrs. T. S. Ware, Ltd., Feltham, arranged a large rock-garden, using a raw Surrey sandstone to form a rather uniform bank sloping to a large central pool. Acers and Cedars were at the highest level, but a central mass of the intense-coloured Azalea Hexe rather spoilt the effect by its harshness. Large drifts of Alyssum, Phlox, and Myosotis gave interest to the group, whilst another pretty feature was a shady nook on one side furnished with Cypripediums, Adiantums and Scolopendriums.

Messrs. J. Backhouse and Son, Ltd., York, built a large rock-garden. The shrubbery at the back necessitated a steep slope to a large pond at the foot, which was fed by a stream expanding to rocky pools from one side. The Ferns here, the Haberleas and Ramondias, Azalea rosæflora, encrusted Saxifrages, Aubrietias and dwarf Phloxes, with the Gentianella in a steep grass bank, formed one of the most effective pieces of planting in the show. A bog garden at the shallow end of the pool was appropriately planted with Primulas, Cypripediums and other subjects.

Messrs. R. Tucker & Sons, Brookside Nurseries, Oxford, built a small rock-garden in the open. They were rather unfortunate in being placed against a high banked group on one side, but they utilised it well in designing a narrow valley rising on either side from the low path that led through the centre of the group. The stone used was a sand-bedded Oxford limestone, generally stratified, but with many worn old pieces full of pockets. The good plants included Stachys corsica, Androsace glacialis, A. helvetica, Eryngium glacialis, Saxifraga montanensis, and many fine encrusted Saxifrages.

The Burton Hardy Plant Nurseries, Christchurch, built an outdoor rock-garden, using some fine pieces of a worn Portland stone, but not, we thought, arranging it to the greatest advantage. The group sloped steeply on three sides to a narrow gully, which ran the length of it. We noted several rare plants, but nothing was finer than a mass of Lithospermum prostratum on one of the lower levels, stretching over a moss-covered weathered old stone. Sedum pilosum, Viola Snowdrift and Phyteuma comosum were also noteworthy.

Messrs. Pulham & Son, Newman Street, London, using a finely weathered grey and mossy Derbyshire limestone, worked out a fine idea of a cliff-face topped with Pines and shrubs and clothed with Cotoneaster, masses of Iberis, Aubrietia, and similar plants cut in two by a mountain stream, which had hollowed out a channel to the lakelet at the base of the group. We were rather disappointed to find at the highest point a wooden summer-house as the goal of the path, but the group had many valuable features. It was worked out naturally from the shrub background of the Hospital gardens, and in the foreground, rising from the lake-side, were outcrops planted with Megaseas, Primulas, Funkias, Incarvilleas and other seasonable flowers.

Messrs. Whitelegg & Page, Chislehurst, Kent, had a bold group of rockwork in the open, using a Tonbridge stone, which we thought looked rather raw and crude and yellow, but which would undoubtedly suit the plants well. Conspicuous mounds on the higher slopes were composed of the Geums Mrs. Bradshaw and John Bradshaw. Good use was made of Aubrietia Bridesmaid, Saxifraga Cotyledon, Habranthus pratensis and Cotyledon spinosum, whilst the rocky steps were well furnished with Arenaria balearica and Veronica repens.

The Guildford Hardy Plant Nursery, Millmead, Guildford, showed a number of interesting plants in a setting of Derbyshire limestone, which



THE CHELSEA SHOW.

Fig. 153.—ROCK-GARDEN EXHIBITED BY MR. J. WOOD.

needed a little more weathering to appear natural. The back slopes rising to the garden shrubbery were well furnished. There were good clumps of Bowles' Black Pansy and Onosma tauricum, whilst Erodium chrysanthum and E. Sibthorpii were pretty. Astragalus horrida, Potentilla pyrenaica, Celmisia spectabilis, Veronica pedunculoides, and the Guildford, or Leonard's, variety of Geum rivale were also conspicuously good.

Mr. G. Reuthe, Keston, Kent, planted a rock-garden which more, perhaps, than any other in the show appealed to the plant specialist for the rarities it contained rather than to the average visitor looking for masses of colour. We noticed especially Fagus Cliffortioides, Daphne caucasicum, Plagianthus betuloides, Olearia dentata (purple flowered), Arctostaphylos nummularifolia, Cassiope mertensianum, Fagus fusca and Saxifraga Kolbi, but the list could be continued at great length without including a common plant. The stone used was the finely-worn Cheddar limestone.

Mr. Clarence Elliott, Six Hills Nursery, Stevenage, had a simply designed rock-garden planted with the keenest appreciation of the value of massing plants for effect. The Cheddar weathered limestone was used, and bold masses of Aquilegia Stuartii, Saxifraga Aizoon rosea, S. Wallacei, Daphne Cneorum, Iberis and Primula sibirica were delightfully grouped on it. On an outcrop separated from the main bank were the rarer Pentstemon Davidsonii, Oxalis enneaphylla rosea, Edraianthus and other choice Alpines.

Mr. Maurice Prichard, Christchurch, Hants, made an attempt to combine the attractions of the natural and formal in gardening. A central rocky mound, built up of large pieces of beautifully weathered marble-like Swanage stone, was separated by a narrow walk from rectangular borders supported by low retaining walls built in thin-bedded stone and suitably planted with Erinus, Linaria, Veronica, etc. In the narrow borders were good specimens of Pentstemon Scouleri and Mertensia lanceolata, but the best plants were in a little moraine garden which occupied the southern slope of the central rockwork. Here were noted Helichrysum trinervatum, Saxifraga Sendtneri, Onosma pallida, Pentstemon cœruleus and other good plants.

Messrs. Barr & Sons, Taplow and Covent Garden, built a large rock-garden in the worn grey Yorkshire limestone, which led up into the natural woodland of the grounds with broad plantings of Myosotis, Bluebells, Irises, and Anchusas. In the foreground a rocky pool with Rodgersias and other plants was surounded with clumps of little-known species, the hardy Orchids Aceras, Ophrys Orchis being especially well represented. Aster Falconeri, with flowers 4 inches in diameter, was fine, whilst good use was made of Oxalis enneaphylla, Onosmas, Gentians, Achilleas and dwarf Phloxes.

The Wargrave Plant Farm, Liverpool Street, London, built a small rock-garden in grey limestone on tabling. Viola orchioides (Greece) and V. Lady Crisp were new, and we noted Aethionema schistosum, Micromeria croatica and Pentstemon Scouleri among the lesser-known plants.

Miss Hopkins, Mere, Shepperton-on-Thames, arranged a small rock-garden under canvas. Iberis gibraltarica. Ramondias and Aubrietias were good in the steep face, while Primula serbica, P. Munroi, P. sikkimense and P. japonica and other subjects filled the lower pockets.

Mr. H. Hemsley, Crawley, used a yellow Sussex limestone to set off a number of rare and interesting Alpine and shrubby plants. The most noteworthy included Myosotis Marie Raphael. Erodium corsicum, Adenocarpus anagyrus, Cortusa pubens, Dianthus deltoides × alpinus and Jeffersonia diphylla. Both these exhibits were staged under canvas.

AWARDS.

First-class Certificates.

Meconopsis Delavayi.—A delightful little Alpine species, with large, solitary, deep-violet, pendent flowers on 3-inch stems. The leaves are few, ovate to lanceolate, on long stalks, pale green above, glaucous below. The whole plant is glabrous. Shown by Prof. Bayley Balfour, F.R.S., Regius Keeper of the Edinburgh Botanic Garden.

Nephrolepis exaltata Willmottæ.—The most erect, densest, dwarfest and brightest golden-green of the plumose forms of N. exaltata, much more compact than the variety Marshallii. The original parent plant was shown retaining its character very finely. Shown by Messrs. H. B. May and Sons.

Cupressus Lawsoniana Fletcheri. — A slow-growing, densely-bushy, erect and freely-branched little plant, with spreading, grey foliage suggesting Retinospora plumosa and purple-stained twigs. The variety is said to have originated as a branch sport from Cupressus Lawsoniana; it makes a valuable addition to the pyramidal rock garden conifers. Shown by Messrs. Fletcher Bros.

Awards of Merit.

Campanula Stevenii nana (see fig. 342).—The variety differs from the type only in having the flowers quite sessile among the leaves. The foliage is dense and carpeting, and the mauve, Gentian-like flowers freely produced among it form an extremely pretty floriferous subject. Shown by Mr. Reg. Prichard.

Lonicera tragophylla.—A Chinese introduction, with striking heads of long-tubed, pale-yellow flowers. The lower leaves are elliptic and short-stalked, but the upper pair are connate, forming a saucer. The corolla tube is 2½ inches in length, and, as the heads contain about a dozen flowers spreading more or less in all directions, a large head is formed 5 inches across. The habit is twining. The plant is scarcely scented. Shown by Messrs. Jas. Veitch and Sons, Ltd.

Pentstemon Davidsonii.—A minute sub-shrubby species, with paired leaves round or nearly ovate, and woody prostrate growth. The flowers are a bright rosy crimson, borne singly or in pairs at the end of the growths. The tube is 1½ inch in length, so that the flowers are very large in proportion to the 2-inch-high plants. Shown by Mr. Clarence Elliott.

Saxifraga Grandfieldii.—A fine-flowering encrusted hybrid, with spreading sprays of pure white, unspotted flowers on stalks 15 inches high. The leaves are ligulate, about an inch long and a quarter of an inch broad, encrusted, and borne in basal rosettes. It is a showy and pretty hybrid. Shown by Sir E. Hambro (gr. Mr. Grandfield).

Styrax Wilsonii.—A dwarf Chinese shrub, with very slender brown wiry twigs and flat, spreading branches. The leaves are ovate-lanceolate, with a few irregular teeth. They have a very delicate texture, and are of a pleasing pale green. The flowers are borne in pendent clusters of two or three at the tips of short, axillary growths. They are pure white, and the deeply-cleft segments spread horizontally to reveal the little clusters of cream-coloured anthers. This is a delightful and floriferous plant. Shown by Miss Willmott.

Begonia "Lena."—This is a valuable addition to the pendulous, tuberous-rooted varieties suitable for cultivation in baskets. The flowers are deep carmine-rose, double, with cactus-like pointed petals, and are borne in large trusses which hang suspended from the pendent growths. The variety seems particularly vigorous and free-flowering. The leaves are characteristically ear-shaped. Shown by Messrs. Blackmore and Langdon.

Auricula "William Smith."—A green-edged show variety of flatter and better form than Mrs. Henwood, with fine band of pure-white paste. The plant shown carried a very large truss, and promised a vigorous constitution. Shown by Mr. James Douglas.

Roscoea cautlioides.—This plant caused much interest at the International Show last year, but was passed over by the Committee then on account of the doubt as to its hardiness. In light soil at Chester it has come safely through the past winter without protection. The flowers are pale yellow, borne on stems a foot high in clusters of six or more, but only two or three are expanded at one time. The upper sepals and petals are hooded, and the lower one is expanded into a broad lip-like fall, sometimes notched in the middle. The flowers are as much as 2 inches in length and 1½ inch broad, and are of a beautifully soft texture. The foliage is erect and stem-clasping. At a distance the flowers and habit of the plant remind one of a Juno Iris like Bucharica, but the plant belongs to the Scitamineæ, and is thus allied to the Canna. Introduced from China and shown by Messrs. Bees, Ltd.

Rose "White Tausendschön."—This is a white sport from Tausendschön, with which it is identical in habit, leafage, vigour and size of flower. The buds and young flowers are tinted with pink, but become pure white as they develop. Shown by Messrs. Wm. Paul and Son.

Rose "Nancy Perkins."—A very dwarf and compact polyantha variety, scarcely reaching a foot in height, and smothered with its free clusters of neat, white flowers. Shown by Messrs. Perkins.

Rose "Irish Fireflame."—A very lovely, large-flowered single H.T. variety, with coppery-orange buds of the delightful form of Irish Elegance. The expanded flowers are a shade of apricot with yellow centres. The foliage is a dark glossy green.

Rose "Mrs. Campbell Hall" (Tea).—A large, full flower, with finely-formed pointed buds of a cream colour, suffused with flesh-pink in varying degrees with age. These two shown by Messrs. A. Dickson and Sons.

Sarracenia Brucei.—A variety with much of the form of S. Arkwrightii, having a long (nearly two feet) gradually tapering trumpet, not bellied, veined in the upper half with crimson. The chief beauty of the plant lies in the large and handsome lid to the pitcher, which it covers, spreading horizontally, and having richly-frilled margins. The colouring is a white ground, heavily veined with crimson, and in the centre shaded with green. The flowers are green, with the reverse of the sepals shaded crimson. The young pitchers are a deep crimson colour. Shown by Mr. A. J. A. Bruce.

Calceolaria "Clarefield Gem."—This is apparently a seedling from C. Clibranii crossed with one of the large-flowered greenhouse varieties. It preserves the tall growth and free-branching, open, elegant habit of Clibranii, but the flowers are borne a little more closely on the stem and are larger. The pouch is circular, a yellow ground shaded with orange, and spotted neatly with crimson. Shown by Mrs. V. A. Litkie, Clarefield, Pinkneys Green (gr. Mr. W. Hulbert).

Aster Falconeri.—An Alpine species, with large, solitary flowers, 3½ inches in diameter. The rays are violet-mauve, and the disc orange-yellow. The short, stout stem and oblong lanceolate leaves are all roughly hairy. Mr. Barr informed us that some years back he received a consignment of seed from the Himalayas. It was widely distributed, but only Mr. W. Marshall appears to have been successful in raising a plant, and this plant is the origin of the stock. It is a strikingly handsome plant, carrying its flowers on stems about 9 inches long. Shown by Messrs. Barr and Sons.

Cytisus Andreanus prostratus.—This is a pendent form of C. scoparius Andreanus, which was shown grafted as a standard. Its chief use will be as a prostrate rock-garden shrub, where its trailing branches will make a delightful feature. Shown by Mr. L. R. Russell, Richmond.

Botanical Certificate.

Olearia Chathamica.—A striking species, with large, solitary flower-heads as much as 2½ inches in diameter. The rays are white, slightly mauve-tinted, and the disc is deep purple. The foliage is as distinct as are the flowers. The leaf-blade, reaching 5 inches in length, is lanceolate, sharply serrate, firm-textured, and white, with dense tomentum below. The plant exhibited was rather "leggy," but had branched freely in the upper half, and with stopping would promise to make a very handsome shrub. Shown by the Rev. A. T. Boscawen.

Fruit.

Messrs. Laxton Bros., Bedford, had the brightest exhibit of fruit, making a special feature of Strawberries. There were fruiting plants in pots and baskets of gathered fruits of the newer varieties. These were King George, which Messrs. Laxton claim to be superior even to Royal Sovereign; Laxton's International, a maincrop variety as large as Leader and with the colour of Royal Sovereign; The Queen, a pale-coloured berry of excellent flavour; and The Earl, a dark fruit in the way of Countess.

A central table was furnished with Currants, Gooseberries, Apples, Peaches, Cherries and other fruit trees, with a border of The Logan and Laxton Berries [illegible] The four

corners of the exhibit were furnished with mounds of pot Strawberries and the effect was increased by arches of Loganberries.

In the open, Messrs. LAXTON BROS. arranged a circular garden planted with fruit trees, including cordon, espalier, candelabra, standard, bush, pyramid, and other shapes, all remarkably healthy and the majority well furnished with fruits. In the centre was a large pot plant of the Laxton Berry abundantly furnished with trusses of fruit.

Messrs. GEO. BUNYARD & Co., Maidstone, showed 80 varieties of Apples, with a few Pears. The fruits had been kept in splendid condition; those of such sorts as Newtown Wonder, Lane's Prince Albert, Striped Beaufin, Bismark, Alfriston, Calville des Femmes (which has been kept for three years), Gascoyne's Scarlet Seedling, Belle de Pontoise and Calville Malingre were as plump and fresh as in November. The very latest-keeping varieties of Apples are Calville des Femmes, Alfriston and Calville Malingre.

The KING'S ACRE NURSERIES, Hereford, exhibited fruit trees in pots, including Figs, Peaches, Gooseberries, Apples, Plums and Nectarines. Trees of Peach Duke of York were carrying ripe fruits. Early Rivers' Prolific Plum was fruiting abundantly; but these, like most of the other varieties, were not nearly ripe.

Messrs. T. S. RIVERS & SON, Sawbridgeworth, had a handsome stand of pot fruit trees and a separate exhibit of Citrus species. The fruits were in all cases ripe, and this made the collection more interesting. Nectarines were very good, especially Cardinal, Early Rivers and Seedling 107, which is said to be superior to Early Rivers in appearance and flower.

There were good specimens of Kestrel and Peregrine Peaches; Blue Rock and Early Rivers Plums; May Duke, Bedford Prolific, Elton and Knight's Early Black Cherries, and various Figs.

Messrs JAMES VEITCH & SONS, LTD., Chelsea, planted a fruit garden in the open. The whole was enclosed with a hedge of espalier, cordon, candelabra, fan-trained and standard-trained trees. In the centre were rows illustrating all manner of training fruit trees. including cup-shaped Apple and Nut trees, double-horizontal cordon trees of Apples and Pears, standard Apple trees with Mistleto growing on the branches, standard Gooseberries, cordons planted obliquely with some trained on one side only as espaliers for furnishing the corner spaces.

Vegetables.

It was not surprising to find that much the best exhibit of vegetables was from the gardens of the Hon. Vicary Gibbs, Aldenham House, Elstree, whose gardener, Mr. Edwin Beckett, appears to be able to exhibit and excel with kitchen-garden produce at all times and in all seasons. Opinions were expressed that it was the best display of vegetables this renowned grower has ever staged; it was certainly the finest exhibit of early vegetables he or any other grower has exhibited. Not only did it include almost everything that could be had in the kitchen garden in May; it was arranged most effectively. There were superb Cucumbers of Peerless and Sutton's Delicacy varieties, excellent pods of Duke of Albany, Early Giant and other Peas; Princess of Wales French Beans; Perfection, Sunbeam and Golden Perfection Tomatos; New Red Intermediate Carrots; Duke of York and Crimson Beauty Potatos of large size; Long Purple and Long White Aubergines and a host of other kinds, including Radishes, Marrows, Celery, Beet, Lettuces, Cress, Asparagus and Mushrooms.

The exhibit of new vegetables staged by Messrs. SUTTON AND SONS, Reading, was also unusually good, and comprised some 50 dishes. In the centre was a batch of Dwarf Beans in pots, the plants carrying a very large crop of pods. In front of these were splendid Early Market Tomatos, and there were other good dishes of the variety Eclipse. Duke of Albany Peas were superb, whilst May Queen Potatos were very large. Late Queen Broccoli were afforded a prominent position. Elevated at the back, in company with Celery and Lettuces, Asparagus, Globe Artichokes, Carrots, Broad Beans, Mushrooms and other kinds furnished variety.

Messrs. JAMES CARTER AND Co., Raynes Park, had an attractive exhibit, staged on a white stand with ornamental railing in front. The collection was a comprehensive one, and included good dishes of Early Morn and Early Duke Peas, Carter's Emperor Potatos, Golden Sunrise and Perfection Tomatos; Mammoth Spring White Broccoli, Moore's Cream Marrows, Asparagus, Carrots, Lettuces, Turnips, Radishes and Cucumbers.

The THATCHAM FRUIT AND FLOWER FARM, Newbury, showed excellent new vegetables in an attractive manner, arranging them on stands of varying sizes, with some on the flat in a bed of Parsley. There were excellent Lettuces, Romaine Passion Rose (cabbage), and White Heart Cos; Winter Beauty Tomato, excellent pods of Gradus Peas; First Crop Cauliflowers, May Queen Potatos, Masterpiece Beans and numerous other kinds.

Mr. S. MORTIMER, Rowledge, showed two new Cucumbers, May Queen (Aviator × Sensation) and Continuity (Sensation × Bounteous).

Mr. THEO. DAWES, Syderstone, Norfolk, exhibited varieties of Rhubarb. One stick of Dawes's Challenge variety was 5 feet long; the green stalks of Stotts Monarch were 2½ inches across.

AWARDS MADE BY THE COUNCIL.

The following is an official list supplied by the Secretary:—

Gold Medals.

Sir George Holford, Westonbirt, Tetbury, for Orchids; Charlesworth and Co., Haywards Heath, for Orchids; Sander and Sons, St. Albans, for Orchids; R. Wallace and Co., Colchester, for rock and formal garden; J. Wood, Boston Spa, for rock garden; Jas. Carter and Co., Raynes Park, for flowering plants and vegetables; Messrs. Veitch and Sons, Chelsea, (1) for trained fruit trees, (2) for stove and greenhouse plants, (3) for flowering plants; Sutton and Sons, Reading, for flowering plants; L. R. Russell, Richmond, for stove plants, Ivies, and shrubs; Blackmore and Langdon, Bath, for Begonias, etc.; Frank Cant and Co., Colchester, for Roses; R. and G. Cuthbert, Highgate, for Azaleas; Dobbie and Co., Edinburgh, for Sweet Peas, etc.; C. Engelmann, Saffron Walden, for Carnations; W. Paul and Sons, Waltham Cross, for Roses and flowering plants; J. Piper and Sons, Bayswater, for shrubs, etc. J. Waterer and Sons, Bagshot, for flowering plants, H. B. May and Sons, Edmonton, for Ferns; Alex Dickson, Newtownards, for Tulips; Hon. Vicary Gibbs, Elstree, for vegetables; W. Fromow and Sons, Chiswick, for Japanese Maples; T. Rivers and Son, Sawbridgeworth, for fruit trees and Citrus in pots; W. Cutbush and Son, Highgate Nurseries, for Carnations.

Farrer Cup.

Bees, Ltd., Liverpool, for Alpines.

Davidson Cup.

Charlesworth & Co., Hayward's Heath, for the best Cattleya, not a hybrid, in the Show (C. Percivaliana variety Mary Regina).

Silver-Gilt Cups.

J. Backhouse & Son, Ltd., York, for rock and water garden; Barr & Sons, Covent Garden, for rock and water garden; J. Piper & Son, Bayswater, W., for rock and water garden; J. Veitch & Sons, Chelsea, for Tulips and general exhibits; Jackman & Son, Woking, for Clematises, Shrubs, and flowering plants; and G. Bunyard & Co., Maidstone, for Apples.

Large Silver Cups.

Maurice Prichard, Christchurch, alpine garden and herbaceous plants; Sutton & Sons, Reading, vegetables, etc.; L. R. Russell, Richmond, foliage and flowering plants; G. Paul and Sons, Cheshunt, Roses and Azaleas; Charles Turner, Slough, Roses, Carnations, Lilacs, etc.; E. Webb & Sons, Stourbridge, Calceolarias and flowering plants; Young and Co., Cheltenham, Carnations; and Amos Perry, Enfield, herbaceous plants and Alpines.

Silver Cups.

Sir Jeremiah Colman, Bart., Gatton Park, Reigate, for Orchids; Armstrong and Brown, Tunbridge Wells, for Orchids; J. Cypher & Sons, Cheltenham, for Orchids; Stuart Low & Co., Bush Hill Park, for Orchids; J. & A. McBean, Cooksbridge, for Orchids; Pulham & Son, Newman Street, for rock garden; T. S. Ware, Ltd., Feltham, for rock garden; J. Cheal & Sons, Crawley, for formal garden, Alpines and Shrubs; Jas. Carter & Co., Raynes Park, for formal garden; Hon. Vocary Gibbs, Elstree, for Pelargoniums; Miss Troyte-Bullock, Yeovil, for Pelargoniums; Leopold de Rothschild, Esq., Leighton Buzzard, for Carnations and Statice; W. Cutbush, Highgate, for flowering plants; Benjamin Cant, Colchester, for Roses; J. Hill & Son, Lower Edmonton, for Ferns; Hobbies, Ltd., Dereham, for Roses; J. MacDonald, Harpenden, for Grasses; and G. Mount & Sons, Canterbury, for Roses.

R.H.S. Standard Cup.

E. H. Davidson, Esq., Borlases, Twyford, for Orchids; Mansell & Hatcher, Rawdon, for Orchids; Craven Nursery Co., Clapham, Yorkshire, for Rock Garden; Cunningham, Fraser & Co., Edinburgh, for Alpine plants; Clarence Elliott, Six Hills Nursery, Stevenage, for rock garden; G. Reuthe, Keston, for rock garden and herbaceous plants; Whitelegg & Page, Chislehurst, for rock garden and Alpines; G. Beckworth & Sons, Hoddesdon, for Roses; Mrs. B. Barrett, Castlethorpe, for Schizanthus; A. J. Bruce, Chorlton-cum-Hardy, for Sarracenias; Miss Litkie, Garden near Hulbert, Dun for Primulas; Reginald Prichard, Wimborne, f Alpines; and Geo. Prince, Longworth, for Roses.

Silver-Gilt Hogg Medal.

Laxton Bros., Bedford, for Strawberries and Fru trees.

Silver-Gilt Knightian Medal.

King's Acre Nurseries, Hereford, for Fruit trees.

Silver-Gilt Flora Medals.

Hassall & Co., Southgate, for Orchids; Barr & Son Covent Garden, for Tulips, etc.; Stuart Low & Co Bush Hill Park, for Carnations, etc.; Phillips & Tay lor, Bracknell, for herbaceous, etc.; Hogg & Robertson Dublin, for Tulips, etc.; B. Bell, Guernsey, for Carna tions; J. R. Box, Lindfield, for hardy plants; H. Bu nett, Guernsey, for Carnations; G. and A. Clark, Ltd. Dover, for herbaceous; J. Jefferies and Co., Cirencester for Tulips; and T. S. Ware, Ltd., Feltham, fo herbaceous plants, etc.

Silver-Gilt Banksian Medals.

Guildford Hardy Plant Nursery, Guildford, for roc garden; W. Artindale & Son, Sheffield, for hardy an water plants; Allwood Bros., Haywards Heath, fo Carnations; Bakers, Ltd., Wolverhampton, for hardy Alpine and bog plants; Fletcher Bros., Chertsey, fo American plants; G. Gibson & Co., Bedale, for Her baceous plants; Kelway & Son, Langport, for herba ceous plants; R. P. Ker & Sons, Liverpool, for Amaryl lis; C. W. Needham, Kelmscott, for Tulips; R. L. Not cutt, Woodbridge, for flowering and foliage plants and Watkins and Simpson, Covent Garden, for annuals in pots.

Silver Knightian Medal.

Thatcham Fruit Farm, Newbury, vegetables.

Silver Flora Medals.

S. W. Flory, Twickenham, for Orchids; Burton Hardy Plant Co., Christchurch, for rock garden; R. H. Bath Ltd., Wisbech, for Tulips and Carnations; C. Blick Hayes, for Carnations; C. Bourne, Bletchley, for Tulips; A. P. Brandt, Bletchingley, for Fancy Pelargoniums; H. Cannell & Sons, Swanley, for Cannas, Pelargoniums, etc.; Carter, Page and Co., London Wall, for herbaceous; J. Douglas, Great Bookham, for Carnations; Mrs. Lloyd Edwards, Llangollen, for Alpines; Godfrey & Son, Exmouth, for Pelargoniums, etc.; Gunn & Son, Olton, for herbaceous plants; H. Hemsley, Crawley, for Alpines; Miss Hopkins, Shepperton, for herbaceous plants; E. W. King & Co., Coggeshall, for Sweet Peas; Rev. H. Buckston, Hutton Hall, for Calceolarias; Mrs. Rolls Hoare, Horsham, for Scented Pelargoniums; Robt. Sydenham, Ltd., Birmingham, for Sweet Peas; Thomson & Charman, Adelphi, for hardy plants; Robt. Veitch & Son, Exeter, for Calceolarias; Wargrave Hardy Plant Farm, Liverpool Street, E.C., for Tulips, herbaceous plants, etc.; and Carlton White, Bond Street, for clipped box and topiary work.

Silver Banksian Medals.

J. Dixon, Wandsworth, for Orchids; C. F. Waters Balcombe, for Orchids; R. Tucker & Sons, Oxford, for rock garden; A. J. & C. Allen, Norwich, for Roses; E. C. Bowell, Cheltenham, for Alpines; H. H. Crane, Highgate, for Violas; John Forbes, Ltd., Howick, for herbaceous plants; H. J. Jones & Co., Lewisham, for Pelargoniums; Kent & Brydon, Darlington, for flowering plants; B. Ladhams, Ltd., Shirley, for hardy plants; W. Lawrenson, Yarm-on-Tees, for Primulas; W. A. Manda, St. Albans, for foliage and flowering plants; G. W. Miller, Wisbech, for herbaceous plants; S. Mortimer, Farnham, for Stocks and Carnations; Reamsbottom & Co., Geashill, for Anemones; W. H. Rogers & Son, Ltd., Bassett, for Alpines, etc.; J. D. Webster, Chichester, for Carnations; and W. Wells & Sons, Ltd., Merstham, for Carnations.

Bronze Medals.

Barrie & Brown, 39, King William Street, E.C., for herbaceous plants; W. & J. Brown, Peterboro', for Lilacs, Roses, etc.; T. E. Dawes, Syderstone, for Rhubarb; R. d'Enncourt Day, Sutton Scotney, for Spanish Irises; H. N. Ellison, West Bromwich, for Ferns and Palms; and Stuart Maples, Stevenage, for Alpines.

AWARDS TO HORTICULTURAL SUNDRIES.

Silver-Gilt Flora Medal.

Mrs. Edith Fisher, E. Molesey, for water-colour drawings of gardens.

Silver-Gilt Banksian Medals.

J. Carter & Co., Raynes Park, for seed-testing experiments; Castle's Shipbreaking Co., Ltd., Millbank, for garden furniture; Drew, Clark & Co., Leyton, for Diamond extension ladders; Sutton & Sons, Reading, for botanical and scientific exhibits; and Wood & Sons, Wood Green, N., for pergola, garden houses, etc.

Silver Banksian Medals.

Pulham & Sons, Newman Street, for garden furniture; G. & W. Purser, Ltd., Hatton Garden, for spraying appliances; D. Roberts & Son, Tottenham, for tubs for shrubs; Wm. Duncan Tucker and Sons, 27, Cannon Street, London, for greenhouses, etc.; United Brass Founders and Engineers Co., Manchester, for spraying machines; Watkins & McCombie, 19, Paternoster Row, for horticultural illustrations; J. P. White & Sons, Ltd., Pyghtle Works, Bedford, for garden furniture; Miss Edith H. Adie, 9, Brechin Place, London, for paintings of garden subjects; Four Oaks Spraying Machine Co., Sutton Coldfield, for knapsack sprayers; Green & Nephew, Ltd., 107, Queen Victoria Street, for flower glasses; Headley Bros., 13, Devonshire Street, Bishopsgate, for garden books and pictures; Potters' Art Guild, Compton, Guildford, for terra-cotta garden furniture; R. Wallace & Co., Colchester, for plans of new gardens; Acme Patent Ladder Co., Earlsfield, for ladders, steps, etc.; Benton & Stone, Ltd., Birmingham, for syringes, etc.; T. Crowther & Sons, Fulham, for iron gates, vases, etc.; Dryad Works, Leicester, for Dryad cane furniture; En Tout Cas Co., Ltd., Syston, Leicester, for garden seats and trellis

work; A. W. Gamage, Ltd., Holborn, London, for garden houses, chairs, etc.; H. Hartjen & Co., Noble Street, E.C., for spraying machines; J. H. Heathman & Co., Parsons Green, for ladders, engines, etc.; Bolckow, Hughes & Co., Blyth, for Teak wood garden furniture; Chas. P. Kinnell & Co., Southwark Street, S.E., for boilers; Liberty & Co., Regent Street, London, for garden furniture; Maggs & Co., Queen's Road, Bristol, for Teak wood garden seats; The Patent Safety Ladder Co., Peterborough, for extension ladders.

Bronze Banksian Medals

Leyton Timber Co., Ltd., Deptford, for rustic garden furniture; London, Provincial & Export Co., Wandsworth, for garden furniture; Thos. Syer & Co., 45, Wilson Street, London, for garden furniture; Vipan & Headley, Leicester, for garden seats, etc.; The Selborne Society, Hanwell, for bird-nesting boxes; Barr & Sons, Covent Garden, for garden requisites; Blake & Mackenzie, Liverpool, for flower-pots and seed-testers; Robert Hughes, Potters Bar, for water-colour drawings of gardens; J. Pinches, Camberwell, for horticultural (Acme) labels; R. Sydenham, Ltd., Birmingham, for rustic table decorations; Cooper, Pegler & Co., Christopher Street, London, for spraying machines; Economic Fencing Co., Billiter House, London, for wood fencing and trellis work; Fenlon & Son, 8, Tudor Street, London, for boilers; Hardy Patent Pick Co., Sheffield, for garden forks, spades, etc.

SPECIAL AWARDS TO HORTICULTURAL SUNDRIES AFTER TRIAL.

Awards of Merit.

Boundary Chemical Co., Cranmer Street, Liverpool, for Demon continuous spray bucket syrings; Cooper, Pegler & Co., Christopher Street, E.C., for continuous pump knapsack sprayer "Eclair No. 1" and knapsack sprayer "Etame"; Four Oaks Spraying Machine Co., Sutton Coldfield, for "Four Oaks" undentable syringe; T. Green & Sons, Southwark Street, London, for 12 in. "Silens Messor" lawn mower; and 12 in. "Silens Messor" lawn mower with close cutting blade for putting and bowling green; and E. A. White, Ltd., Paddock Wood, for "Abol" syringe and "Abol" continuous knapsack sprayer.

Highly Commended.

The Alpha Extinguisher Co., Ltd., Hereford, for Alpha hand diffuser; A. J. Barbour & Co., Leeds, for Watson's lawn sand; Barr & Sons, Covent Garden, for bulb planter; Corry & Co., Bedford Chambers, Covent Garden, for Tenax grafting wax; Four Oaks Spraying Machine Co., Sutton Coldfield, for Four Oaks centre knapsack pump, Four Oaks large continuous pumping battle sprayer, Four Oaks nozzles; Hartjen & Co., 35, Noble Street, London, for Hartjen battery fillers and holders; Headly & Edwards, for through water-way garden hose reels; V. T. Hill, Langford, for slug traps; Lloyd, Lawrence & Co., Worship Street, London, for Pennsylvania lawn cleaner; Skinner, Broad & Co., Bristol, for patent wire tension greenhouse; W. Voss & Co., Millwall, for Voss's naphtha nicotyl; Wood & Sons, Wood Green, for square garden house with bamboo screen lining.

Commended

A. J. Barbour & Co., Leeds, for Watson's weed-killer; J. Bentley, Ltd., Barrow-on-Humber, for Bentley's double strength weed-destroyer; Benton & Stone, Birmingham, for continuous pump knapsack sprayer, for utility Contus pumping sprayer, for hand diffuser No. 1807; Cooper and Nephews, Berkhamsted, for Cooper's weedicide; Cooper, Pegler & Co., Christopher Street, London, for hand diffuser; Corry & Co., Bedford Chambers, Covent Garden, for "Niquas" syringe, for Vesey's patent spreader for distributing lawn sand, etc.; F. R. Durham, Salcombe, for hardy plant protector; The Dryad Works, for cane furniture for (a) garden use; (b) conservatory use; Hartjen & Co., Noble Street, London, for holder hand diffuser; Lloyd, Lawrence & Co., Worship Street, London, for Pennsylvania lawn mower, for Planet Junior double wheel hoe No. 11; G. & W. Purser, 92, Hatton Garden, London, for Arnold sprayer No. 2; Robinson Bros., West Bromwich, for Clift's fluid insecticide; The Selborne Society, Hanwell, for Selborne bird nesting boxes; and C. E. West, Higham Hill, for reels and coils of raffia tape.

SOCIETIES.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

May 1.—*Committee present:* Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, J. Bamber, J. Cypher, J. Evans, Dr. Hartley, A. J. Keeling, J. Lupton, D. McLeod, W. Morgan, C. Parker, A. Warburton, E. H. Davidson, and H. Arthur (secretary).

AWARDS.

First-class Certificates.

Brasso-Cattleya-Laelia Triune var. "*Gratrixae*" (L.-C. Hyeana, × B.-C. Schroderæ Digbyana), a magnificent flower with a wide, drooping, well-coloured lip. Shown by Mrs. Gratrix.

Odontoglossum Jasper "*Orchid Dene*" *var.* (O. amabile × O. crispum), a large well-spotted flower with rosy ground; *Odontoglossum Aireworth* "*Borlases*" *var.* (O. crispum × O. Lambeauianum), both from Mr. E. H. Davidson.

Awards of Merit.

Cattleya Enid var. Illustris, and *Cattleya Mendelii var. Regina*, both from Mr. J. Leeman.

Laelia Cattleya Duchess of Connaught (L. Harpophylli × C. Schroderæ), from Mrs. Gratrix.

Annual Meeting.

The annual general meeting was held at 2.30 p.m. R. Ashworth, Esq., was appointed president and hon. treasurer of the Society, the Rev. J. Crombleholme, chairman, Messrs. Z. A. Ward, vice-chairman, H. Thorp, hon. auditor, and H. Arthur, secretary.

The committee was appointed. The prizes were presented to the successful exhibitors as follows:—

"Gratrix" Cup, "Davidson" Cup, and Messrs. Cypher's Gold Medal, to Z. A. Ward, Esq. (gr. Mr. Weatherby).

Gold Medal, presented by Mr. Z. A. Ward, to Col. J. Rutherford, M.P. (gr. Mr. Lupton).

Gold Medal, presented by Mr. O. O. Wrigley, to A. Warburton, Esq. (gr. Mr. Dalgleish).

Messrs. Sander and Sons' Prizes, Mr. Lupton (gr. to Col. J. Rutherford, M.P.), and Mr. Marshall (gr. to Rev. J. Crombleholme), equal firsts, and Mr. Weatherby (gr. to Z. A. Ward, Esq.), third.

The Society's Gold Medal offered for amateurs who do not employ a gardener, to Mr. H. Arthur, and the Silver Gilt Medal to Mr. F. A. Hindley.

A Gold Medal, together with a prize for the gardener, offered by a member of the Society for the most meritorious exhibits during the session, was awarded to R. Ashworth, Esq., and his gardener, Mr. Gilden.

THE WEATHER.

GENERAL REMARKS.

Weather.—Over the United Kingdom as a whole the greater part of the week was fair and dry, no rain falling after the early days, while in some parts of the eastern half of England the period was dry throughout. Local thunderstorms were experienced in various places on the 11th, and at a few south-western stations on the 14th.

Temperature was a little above the normal in some districts, and below it in others, the greatest divergence being 1.3° in England S.W. The highest of the maxima occurred generally during the later days of the week, and ranged from 72° in England S.E. and 70° in the Midland Counties to 65° in the English Channel. The lowest of the minima, which were also recorded during the prevalence of the north-easterly wind late in the week, varied from 29° in Scotland E. and 30° in England N.E. and the Midland Counties to 38° in England S.E., and to 46° in the English Channel. The lowest grass readings were 25° at Birmingham, and 26° at Crathes, Balmoral, and Southport. The temperature of the soil was above the average in a few parts of the country, both at a depth of 1ft. and 4ft., but generally it was below it, the greatest divergence being 3.8° at 1ft. at Cardiff.

Mean temperature of the sea.—On nearly all parts of the coast the water was colder than during the corresponding week of last year, and its temperature was also below the normal. The mean figure ranged from 54.5° at Seafield, 53.8° at Salcombe, and 53.5° at Teelin, to 46° at Lerwick and 45.1 at Burnmouth.

Rainfall was less than the average in all districts except the English Channel, the fall in England E. and N.E. being less than 0.05in. On the 12th the fall was very considerable at many places along the south and south-west coasts; at Westbourne the gauge yielded 1.04in.

Bright sunshine was much less than the normal in the English Channel, a little less in Scotland, and just equal to it in England N.W. and Ireland S. Elsewhere there was a slight excess. In the English Channel and Ireland N. the daily mean was 5.2 hours, and the percentage of the possible duration 34 and 32 respectively; in England S.W. the corresponding figures were 7.2 hours, and 47, and in England E. 8.3 hours and 54.

Barometer and wind.—During the earlier days of the week a depression which arrived from the westward moved slowly from the south-west of Ireland to the Bay of Biscay, while pressure was highest in an anticyclone far to the northward of these islands. The resulting easterly winds were at first of little strength, but they subsequently increased somewhat, and as the northern high pressure system gradually took up a position off our western and north-western coasts the direction became north-easterly and northerly. On Thursday a gale was experienced for a time on some parts of the English Channel. By the end of the week the high pressure lay to the south-westward of Ireland while a depression had appeared off the north of Scotland, and the general direction of the wind in the United Kingdom was between south-west and north-west. On the extreme north-west and north-east coasts the force of a strong wind or gale was attained.

THE WEATHER IN WEST HERTS.

Week ending May 21.

The sunniest week as yet this spring.—This was on the whole a cold week, and more particularly at night. On the warmest day the temperature in the thermometer screen rose to 70°—the highest reading as yet this year, but by no means an unusually high reading for the middle of May. On four consecutive nights the exposed thermometer registered 2°, 3°, 6°, and 5° of frost—all moderate frosts for the time of year. The ground is at the present time at about an average temperature for the time of year, both at 1ft. and 2ft. deep. No measurable rain has now fallen for eight days, but on the afternoon of the 18th inst. there was a sharp shower of hail. For the past two days there has been no percolation at all through either of the soil gauges. The sun shone on an average for nine hours a day, which is 2¾ hours a day longer than is usual at the same period in May—making this the sunniest week by far of the present spring. On two consecutive days the sun shone for respectively 12 and 12¾ hours. The wind was as a rule rather high during the week, but in no hour did the mean velocity exceed 12 miles—direction west. The average amount of moisture in the air at three o'clock in the afternoon fell short of a seasonable quantity for that hour by 4 per cent. A selected bush of the Hawthorn came first into blossom on the 18th inst., which is four days earlier than its average date of first flowering in the previous 22 years, but a week later than last year. The first Rose to flower in my garden was a variety of Rosa alpina, which came first into bloom on the 15th inst., or ten days later than last year. Rosa sericea pteracantha first showed an open flower on the 21st inst. *E. M., Berkhamsted, May 21, 1913.*

DEBATING SOCIETIES.

Watford Horticultural.—The usual monthly meeting of the above Society was held on the 9th inst. at the St. Andrew's Schoolroom, Church Road. The chair was taken by Councillor C. H. Halsey and there was a good attendance of the members. Two papers were read, one on "Calceolarias, Cinerarias and Primulas," by Mr. J. J. Graham, Colney Park Gardens, and the other on "Summer Bedding," by Mr. H. Kercher, of Hemel Hempstead.

Publications Received.—***Annual Report for 1912 of the Rothamsted Experimental Station, Harpenden,*** with the Supplement to the "Guide to the Experimental Plots," containing the Yields per Acre, etc. (Harpenden: Rothamsted Experimental Station.)—***Twenty-third Annual Report of the Missouri Botanic Garden.*** Secretary, Mr. A. D. Cunningham, Missouri Botanic Garden, St. Louis, U.S.A.—***Annual Report of the Board of Regents of the Smithsonian Institution, 1911.*** Secretary, Mr. Charles D. Walcott, Smithsonian Institution, Washington.—***Garden Work,*** by William Good. (London: Blackie & Son, Ltd.) Price 5s.—***Journal of the Royal Horticultural Society.*** March. Secretary, Rev. W. Wilks, R.H.S. Hall, Vincent Square, Westminster.—***Journal of the National Poultry Organisation Society, Limited.*** April. Secretary, Mr. Edward Brown, 38, Queen Anne's Chambers, Dean Farrar Street, Westminster, London. Price 6d.—***The Ring of Nature,*** by G. G Desmond (London: Methuen & Co., Ltd.). Price 5s. net.—***Gardening,*** by A. Cecil Bartlett. (London and Edinburgh: T. C. & E. C. Jack). Price 6d.—***Notes from the Royal Botanic Garden, Edinburgh.*** Price 9d.—***Thirtieth Annual Report of the Metropolitan Public Gardens Association.*** Secretary, Mr. Basil Holmes, 83, Lancaster Gate, London. Price 6d.—***Report of The Midland Re-afforesting Association for 1912.*** Secretary, Mr. P. E. Martineau, 55, Newhall Street, Birmingham.—***Bulletin No. 7 of the American Gladiolus Society.*** Secretary, Mr. L. Merton Gage, South Natick, Mass.—***Journal of the North of England Horticultural Society.*** May. Secretary, the Rev. J. Bernard Hall, Rawdon, Leeds.—***Bulletin of Miscellaneous Information, Royal Garden, Kew.*** Catalogue of the Library: Additions received during 1912.—***The Young Gardener,*** by the Countess of Selborne. (London: Edward Arnold.) Price 4d.—***The People's Money,*** by John W. de Kay. (London: Effingham Wilson.)—***Science Progress.*** April. (London: John Murray.) Price 5s. net.—***The Hardy Flower Book.*** By E. H Jenkins. (London: Country Life, Ltd.) Price 2s. 6d.—***Hints for Holidays.*** London and South Western Railway's Official Illustrated Guide, 146, Kingshall Road, Beckenham.—***The National Rose Society.*** Arrangements for 1913. Secretary, Mr. Edward Mawley, Rosebank, Berkhamsted.—***With Camera and Rucksack in the Oberland and Valais,*** by Reginald A. Malby. (London: Headley Brothers. Price 10s. 6d. net.

GARDENING APPOINTMENTS.

[*Correspondents are requested to* **write the names of persons and places as legibly as possible.** *No charge is made for these announcements, but if a small contribution is sent, to be placed in our collecting Box for the Gardeners' Orphan Fund, it will be thankfully received, and an acknowledgment made in these columns.*]

Mr. G. W. BELLAMY, for the last 5 years Gardener to CAPT. PULLIENE, Sandford House, Richmond, Yorkshire, as Gardener to COLONEL FOSTER, Littlemoor House, Queensbury, near Bradford.

Mr. E. G. LANGFORD, for the past 17 months Gardener to the late Miss E. J. TROUP, High Meadow, Saltwood, as Gardener to F. J. TENNANT, Esq., Lympne Castle, Kent.

Mr. A. C. HORTON, for 7 years Gardener to T. L. BOYD, Esq., at North Frith, Tonbridge, as Gardener to Lord DE SAUMAREZ, Shrubland Park, near Ipswich.

Mr. A. P. UMPLEBY, for the past 2½ years Gardener to Mrs. DREWETT, at Iridge Place, Hurst Green, Sussex, as Gardener to Mrs. C. T. MCADAM, Craigengillan, Dalmellington, Ayr, Scotland.

Mr. E. CROUCHER, for the past 18 months at Wrest Park, Bedfordshire, as Gardener to H. OAKDEN, Esq., Stutton House, Stutton, near Ipswich.

Mr. H. S. WALKER, late of Kenton Court, Sunbury-on-Thames, and previously Foreman at Parmoor, Henley-on-Thames, as Gardener to W. WEBB WARE, Esq., Winkworth, Hascombe, near Godalming.

Mr. H. W. JAMES, for the past year and seven months Foreman at Weeting Hall, Brandon, Norfolk, and previously at Paundon Park and Evenley Hall, as Gardener to Major F. S. SAVILL-ONLEY, Blickling Lodge, Aylsham, Norfolk.

CATALOGUES RECEIVED.

WM. CUTBUSH AND SON, Highgate Nurseries, London, N.—"Azure" for colouring Hydrangeas blue.

TILLEY BROS., 133, London Road, Brighton.—Bedding Plants.

KEYNES, WILLIAMS AND CO., Salisbury.—Dahlias.

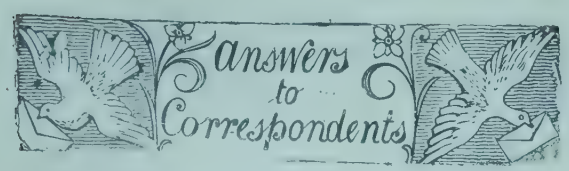
M. MAURICE LEVEQUE DE VILMORIN, Les Barres, par Nogent-sur-Vernisson, Loiret, France.—New plants exhibited at the Ghent Exhibition.

Obituary.

THOMAS COOPER.—I have to report the death at the ripe age of 97 years and eight months of Mr. Thomas Cooper, who departed this life on May 16 at Kew, Surrey. Mr. Cooper was formerly well known as a successful cultivator and lover of succulent plants. Between 1859 and 1862 he travelled in South Africa and collected and introduced many plants into cultivation, as the pages and plates in the *Refugium Botanicum* and *Botanical Magazine* amply testify. Two of the best-known of his many introductions are Galtonia candicans and Asparagus plumosus, both of which he had in cultivation, as also had Mr. Wilson Saunders, of Reigate, some years before they were known to the trade and general public. The curious Bowiea volubilis, occasionally seen in collections, is also one of the plants he introduced. *N. E. Brown.*

TRADE NOTE.

Mr. GEORGE WEST, for the past nine years Gardener at The Friary, Old Windsor, has taken over The Gables Nursery, Datchet, Buckinghamshire, and purposes carrying on the business as a Carnation Grower and General Nurseryman.



APPLE BRAMLEY'S SEEDLING: *Rev. E. H.* We are unable to tell you the record yield of a tree of Bramley's Seedling. An average of 24 st. or 8 bushels per tree would be a great one for large standard trees in full bearing, and half as much would be a good average for trees in the tenth year from the planting in a productive season, or a quarter as much for dwarf trees. As the result of inquiries made among growers in Kent a few years ago 10 tons per acre for standard and 5 to 7 tons for dwarf Apples were the yields given for trees in their best periods of productiveness. Exceptionally large yields from individual trees, of course, may be two or three times the average yield.

ANCHUSA: *W. H. P.* Your information is quite correct; the Opal variety of Anchusa italica should be propagated by root-cuttings. In the early spring cut the roots into inch lengths and plant the cuttings singly in pots filled with light, sandy soil and root them in a temperature of about 50°. If a slight bottom heat is available the rooting will be expedited. When rooted the young plants should be grown for a few weeks in a light position in the same structure, then gradually hardened so that they may be planted in permanent positions in mid-April, during favourable weather. If properly treated such plants will flower the same year.

ESPALIER PEAR TREES: *R. O. F.* Pinch out at once the points of the extra strong shoots to which you refer. The weaker growths should be pinched back to within 4 or 5 inches of their bases about the middle of June or beginning of July, according to the growth the trees have made in the meantime. The stopping will encourage the formation of fruit buds; we should not advise the application of manure water to the roots until the light crop of fruit you mention has attained to half the normal size.

FERTILISER FOR ROSES: *J. D. P.* Superphosphate 3 oz. and sulphate of potash 2 oz. per square yard may be applied, but these chemicals should have been put on in February or March. The use of nitrate of soda is inadvisable; if any quick-acting manure is wanted, sulphate of ammonia is the better, applying it at the rate of 1 oz. per square yard. Sulphate of magnesia is not needed.

FUCHSIA AND COLEUS AS SPECIMENS: *M. G., Mealsgate.* A good specimen Fuchsia is usually at least two or three years old, although occasionally the desired result may be obtained in eighteen months. The cuttings should be rooted in early spring and continue their growth steadily all the season. In order to form a pyramid it should not be necessary to stop the leading shoot, as Fuchsias usually branch naturally; but the laterals must be stopped at every second leaf. The following season the same system should be continued, but the pinching process must cease in time to allow the plant to bloom freely at the period of the exhibition. In most cases a month or six weeks will be enough, but the time depends largely upon circumstances, such as the weather. The same methods may be applied to specimen plants of Coleus. The young plants should be rooted at the end of the summer, and should grow slowly all the winter. The laterals should be stopped at every second leaf. The same treatment should be given the next season when they are potted and growing freely; and again the stopping must be discontinued in time to allow the plants to bloom before the exhibition. In the cases of both plants, if they do not branch freely, the leading shoot may be stopped as an inducement to develop lateral growths.

HUMEA ELEGANS: *A. P. G.* It is not usual for the foliage of Humea elegans to cause symptoms of eczema. You do not state what other plants are grown in the same house with the Humea.

LORD NAPIER NECTARINE: *Foreman.* The disfigurement and subsequent cracking of the skin of the fruits has been caused by exposure to strong sunshine while they were young. The tree should be lightly shaded from the full glare of the sun; as the Peach house faces east and south it receives plenty of sunshine. Lord Napier variety is more susceptible to the effects of too bright sunshine than any other Nectarine. Your treatment in other respects is fairly correct, but we should not advise the application of cow-manure to the borders until the stoning process is completed.

NAMES OF PLANTS: *P. H. R.* 1, Ribes aureum; 2, Lonicera tatarica; 3, Staphylea Colombieri; 4, Lonicera oblongifolia.—*H. J. B.* You should have numbered the specimens. Euonymus radicans variegata, Teucrium fruticans, Cornus alba Spathii, Acer palmatum var. septemlobum purpureum, Ercilla volubilis (Bridgesia spicata).—*Constant Reader.* Sequoia sempervirens.—*E. T.* 1, Olearia Gunnii; 2, Buxus balearica; 3, Ligustrum lucidum; 4, Æsculus sp. (send when in flower); 5, Azara microphylla; 6, Muehlenbeckia complexa.—*F. W.* 1, Ruellia Portellæ; 2, Stenandrium Lindenii; 3, Kerria japonica var. flore pleno; 4, Cydonia japonica var.—*T. H. R.* 1, Sedum rupestre; 2, Tellima grandiflora; 3, Saxifraga Geum var.; 4, Send when in flower; 5, Thymus citriodorus var. variegatus; 6, Send when in flower.—*R. L.* Scilla hispanica—Spanish Bluebell.—*Bunarcaig.* Ribes aurea.—*A. G. B.* It is impossible to name with certainty single blooms of Pelargonium. They resemble Fire Glow (Cactus) and Mrs. William Carpenter.—*H. B., Grange.* 1, Prunus Padus; 2, Amelanchier canadensis; 3, Griselinia littoralis; 4, Spiræa callosa; 5, not found; 6, Clivia nobilis syn. Irnantophyllum Aitonii.—*O. Charlton.* Irish Yew (Taxus baccata fastigiata), Cupressus Lawsoniana erecta viridis. There are also erect-growing forms of Thuya gigantea, Juniperus communis, Cephalotaxus pedunculata and Retinospora leptoclada.—*Joan.* Bird Cherry (Prunus Padus).—*J. M.* 1, Pinus insignis; 2, Cupressus pisifera; 3, Juniperus chinensis; 4, Cupressus obtusa; 5, Cupressus Lawsoniana erecta; 6, Tsuga Pattoniana.

RUNNER BEANS ON OLD PASTURE LAND: *G. H.* It is not advisable to dress the land with nitrate of soda. The best fertiliser for the ground is a little well-rotted dung. Good cultivation is better than applying manure so late in the season.

TRUSSES OF APPLE BLOSSOM DROPPING: *E. H.* There is very little chance of ascertaining the cause of injury from the inspection of only two trusses of Apple blossom. At least a dozen should have been sent. Even from the two specimens, however, it is clear that a caterpillar has caused damage, as most of the buds have been eaten off, partly or wholly, and the evidence points to the larva of the Bud Moth. If the specimens were picked up from the ground any caterpillars in them would probably have dropped or crawled out. It often happens that one variety of Apple is subject to a particular attack from which other varieties are exempt. The tree may have been raised in a different nursery, or a different part of the same nursery from that from which the other varieties came, and it may have been infested with eggs. As the trees are only two or three years from the planting, perhaps they did not blossom last year, which would account for your not having then seen any injury. But while injury to the buds from caterpillars is obvious, the cause of the dropping of the whole trusses is not certain. The spurs to which the trusses were attached need examination. The Bud Moth caterpillar may have gnawed the bases of the trusses partly through, causing them to drop, or there may be larvæ of the Pith Moth in the spurs below the trusses. If you examine trusses which are flagging, but have not yet dropped, using a magnifying lens, you will probably find caterpillars, very small at present, and the spurs may be tunnelled by the Pith Moth caterpillar. The only clear connection between nature of soil and premature falling of the blossom-trusses is that trees in unsuitable soil are lacking in vigour, and therefore so much the more susceptible to insect or fungous attack. But Lane's Prince Albert is a feeble grower, and a rich and somewhat heavy soil, if well drained, should suit it.

Communications Received.—L. Y.—Beginner—P. D. W.—W. C. L.—H. W.—Nemo—Tarragon—T. R.—W. B.—H. E. K.—G. M.—W. H. M.—Gardenia—Constant Reader—B. G.—A Constant Reader—S. M. P.—Mrs. L.—C. H. P., Hampstead—Young Gardener—H. B.—A. B. C.—A. J.—C. S.—H. P.—R. J. W.—K. and Son—W. J. V.—Dr. M.—W. B. and Sons—T. S. W., Ltd.—T. P. E. and Bros.—G. M. T.—L. K., Switzerland—J. D.—H. R. D.—L. St. C.—Rosary—H. B.

THE
Gardeners' Chronicle
No. 1,379.—SATURDAY, May 31, 1913.

CONTENTS.

Androsace tibetica ...	362	Plant collecting in China	370
Anoplanthus coccineus	371	Rhododendron exhibition at Westminster...	372
Berry, Mr. G. P. ...	370	Rockery, the construction of an ideal ...	364
Books, notices of—		Rolfe, Mr. R.A., honour for	370
Botanical Magazine...	370	Rose society in Canada	362
The Nation's Library	370	Roses under glass ...	361
Cabbage, spring ...	365	Royal Horticultural Society criticised ...	368
Carnation Lady Ingestre	372	Scotland, notes from ...	372
Chelsea flower show ...	369	Societies—	
Davidia involucrata ...	371	City of London Rose	370
Foreign correspondence—		Horticultural Club ...	373
Fruit farming abroad	365	Kew Guild	373
Forestry, notes on ...	364	National Tulip ...	374
Ghent, summer horticultural exhibition at	370	Royal Horticultural 370,	372
Heal, Mr. John	370	Royal Meteorological	374
Iris hunt in Dalmatia...	363	Royal Scottish Arboricultural	374
La Mortola, rockery planted with succulents at	369	Trinidad Botanic Garden	370
Law note—		Tulips, branching ...	371
Failure of a nurseryman	375	Undeveloped Land Duty	372
Musanga Smithii, the reproduction of ...	370	Vanilla, the cultivation of, in St. Vincent ...	370
Obituary—		Week's work, the—	
Avebury, Lord ...	375	Flower garden, the...	366
Methven, John ...	375	French garden, the...	367
Orchid notes and gleanings—		Fruits under glass ...	367
Bulbophyllum patens	363	Hardy fruit garden...	366
Lælio-Cattleya Aphrodite splendens ...	363	Kitchen garden, the...	366
Odontioda Cupid ...	363	Orchid houses, the ...	366
Odontioda Penelope...	363	Plants under glass ...	366
Peaches and nectarines out-of-doors, thinning	371	Public parks and gardens	367

ILLUSTRATIONS.

Androsace tibetica 362
Avebury, Lord, portrait of the late 375
Formal garden exhibited by Messrs. J. Carter and Co. at the Chelsea Exhibition, showing the entrance gates 369
Flowering plants, a group of, exhibited by Messrs. E. Webb and Sons 371
Methven, John, portrait of the late 375
Olearia chathamica 363
Rockery of succulents at La Mortola, Ventimiglia, Italy (Supplementary Illustration).
Rose Irish Fireflame 365

ROSES UNDER GLASS.

THE National Rose Society has held its first show of Roses grown under glass, and, on the whole, it was a considerable success, and should encourage the Society to proceed further in the matter in future years.

The schedule was necessarily a tentative one. So far as the nurserymen were concerned it seemed to leave little to be desired; many of the groups were magnificent, and all were interesting. A fair number of amateur exhibitors also appeared, and these will doubtless increase as the classes suited to the smaller growers are understood. The Society owes so much of its success to the way in which it has provided for all classes among its members that it may be trusted to give full consideration to any proposals calculated to increase the popularity of its spring shows.

Growing Roses under glass is a very interesting pursuit, and as the amateur members of the Society come to realise that it can be followed without elaborate structures, or numerous assistants, it will doubtless be found to extend to the smallest greenhouses, where little more fire heat is used than is necessary to keep out frost.

Most amateurs who propose to begin growing Roses under glass will be well advised to procure their plants in the first instance from the nurseryman with whom they deal. By so doing they will be able to secure plants established in pots, and so save two years. The alternative is to bud the Roses required in the course of the coming summer, flowering them out-of-doors next year as maiden plants. These will be potted up in the autumn, and in so doing all long roots should be cut back severely, and the shorter ones sufficiently reduced to enable them to go comfortably into 6-inch pots. They may, and should, be brought indoors and grown on during the following spring, but much should not be expected of them. During the summer they should receive weekly supplies of liquid manure, and in the following autumn, the third autumn after the insertion of the bud, they will be ready to place in 8-inch pots, which are the most convenient size in which to grow the general collection of pot Roses. At this potting a few crocks should be placed at the bottom of the pot, then about an inch of broken charcoal and a small quantity of half-inch bones, potting the plants in turves from rather heavy land, which have been stacked with thin layers of manure between them for six months, and adding sufficient silver sand to keep the compost porous.

It is best not to prune the plants at the time of the autumn potting, but any weak and twiggy growths should be removed and the plants should be stood out-of-doors in a sheltered place, or in frames, for a time. Before severe frosts come they should either be brought indoors, or, what I usually find more convenient, placed in pits where they can be covered at night and during severe weather; for pot Roses, though they will stand a good deal of frost, do not seem to do so well afterwards, if they have been allowed to get thoroughly frozen. When placed in pits or frames they can be brought indoors when required. The general rule is that about 14 weeks should be allowed from the time they are brought indoors to the time when they are wanted in flower, but early in the season rather longer should be allowed, and if Hybrid Perpetuals are grown, somewhat longer should be allowed for them than for the Teas and Hybrid Teas.

From the nurseryman the plants may be obtained in 5 or 6-inch pots, in late summer or autumn, and potted on into 8-inch pots as mentioned above, or they may be had already prepared for flowering in 8-inch pots at a slightly increased cost.

Whichever plan be adopted the Roses should flower satisfactorily in the spring after their shift into the 8-inch flowering pots, and will usually last three or four years. A few specially good plants may be kept longer, but it seldom pays to keep Roses in pots very long.

The two principal dangers against which the amateur must be on his guard are mildew and the sudden hot suns of April, both of which may have a disastrous effect on the foliage. For mildew in the early stages of the growth of the plants there is, I think, nothing better than systematic syringing with Abol. This cannot, however, be continued after the flower-buds begin to open, when dusting with sulphur powder may be practised. Against sudden outbursts of hot sun some form of shading should be at hand. If there is nothing better, a couple of old muslin curtains sewn together and rolled on poles may be used with effect.

To those who try growing Roses under glass for the first time it is quite a revelation how clean and well-shaped the Teas appear, and for this reason it is probable that a fair proportion of Tea Roses will be selected by anyone starting a collection of pot Roses. For this purpose Tea Roses may be roughly divided into two classes; those that look well on the plants, and those which, from their straggling habit of growth, are most useful as cut flowers. In the first category I would place Alexander Hill Gray, Alice de Rothschild, Innocence, Lady Hillingdon, Molly Sharman Crawford and the two Safranos; I have found A. Hill Gray and Molly Sharman Crawford specially pleasing.

The second category includes Roses like Bridesmaid, Catherine Mermet, Lady Roberts, Mrs. Herbert Stevens, Mme. de Watteville, Mrs. Edward Mawley, The Bride and White Maman Cochet. All these give beautiful flowers for specimen glasses and for decoration, but the blooms are either too straggling or hang their heads too much to look well on the plants.

Several of the Hybrid Teas are useful under glass, and most of them hold themselves well on the plant.

Caroline Testout under glass is of better shape and less heavy than when grown outside. Countess of Derby is very pleasing. Out-of-doors, the weakness of this Rose is its liability to damage from inclement weather. Indoors, the conditions of the atmosphere are under control, and the Countess of Derby produces charmingly shapely and clean blossoms, which, though rather thin, have sufficient substance to make good flowers.

Dorothy Radcliffe, possibly derived more or less directly from the Lyons Rose, gives a few nicely formed flowers of characteristic pink and yellow colouring. So far as my observation goes down to the present, it is not very free under glass, but such flowers as come are good.

Killarney is undoubtedly one of the best Roses for the purpose of growing under glass. Its liability to mildew must be borne in mind, but if timely precautions be taken, the disease is not at all troublesome.

I grew a small group of Lady Alice Stanley in the garden for some years, and having failed to obtain a single perfect blossom, either in hot or cold

weather, I resolved to get rid of it, in spite of its delightful perfume. Fortunately, however, I happened to see some flowers of this Rose shown by Mr. Paul at the International Exhibition, which so pleased me that I determined to pot up my plants. Though only their first year in pots they have been quite satisfactory, giving me a number of quite pleasing flowers, perhaps as strongly scented as any Rose I grow. Jean Noté is another Rose which I have discarded from the garden, but have found quite pleasing in pots.

Lady Ashtown, Mrs. W. J. Grant, and Lady Pirrie have proved somewhat disappointing, and for the same reason, viz., that the flowers, though pretty, have not proved very lasting. The same is true also of Mrs. A. R. Waddell, but the colour of the last-named Rose is so striking that it is worth growing to cut as buds.

Mme. Abel Chatenay, Mrs. George Shawyer, Pharisaer, Richmond, and White Killarney are all excellent Roses for pots, and if Caroline Testout be added to them it would, perhaps, be difficult to find among the H.Ts. half-a-dozen better for the purpose. Richmond is, I think, the best red Rose for pots. It requires generous treatment, and should be picked when quite young, to avoid "the blues," a trouble from which its colour suffers if it is allowed to remain long on the plant. White Killarney has been most free and quite charming, sharing with Molly Sharman Crawford the position of the two best white Roses in pots as grown by me this year. The Lyons Rose is good, but hardly free enough, and my flowers have come at intervals, so that I have only had one to pick at a time. Sunburst has many desirable qualities; the first flowers are picked off as soon as the buds are formed, and the secondary shoots allowed to develop. Its long and rather straggling growth, however, is somewhat against it.

I have grown half-a-dozen H.Ps., Frau Karl Druschki, Général Jacqueminot, Mrs. John Laing, Mrs. R. G. Sharman Crawford, Suzanne Marie Rodocanachi, and Ulrich Brunner. The colour of Suzanne M. Rodocanachi is not good under glass, and I propose to discard it. None of the six is indispensable, but Frau Karl Druschki and Mrs. John Laing are perhaps the best. Ulrich Brunner is a better colour under glass than in the garden, whence, for the time being, he has been uprooted.

On the whole, the amateur will probably be well advised not to grow too many varieties in his greenhouse. If he finds he has room for 30 Roses he might select half-a-dozen varieties, five of each. If he decides to grow 50, he might add two or three more to this number.

I have said nothing of the Polyantha Pompons, which make very nice little plants under glass, either in 6-inch pots or as short standards, and, remaining in flower as they do for a long time, might often be substituted for winter-flowering Pelargoniums and Calceolarias for the decoration of the conservatory. *White Rose.*

FIRST ROSE SOCIETY IN CANADA.

IT will interest horticulturists and rosarians especially to know that the first Rose Society has been established in Canada, and promises to be before long a "National" Society. Its operations are at present confined to the immense province of Ontario, and the vast distances that have to be travelled make the task of the President and Council a work of great difficulty. But that will be overcome. Already the first pamphlet has been issued, "First Steps in Rose Growing," by Mrs. Allen Baines, a Vice-President, and the first show will take place in St. George's Hall, Toronto, on July 10 next, when prizes of considerable value will be competed for. Interest in horticulture is, like most enterprises, quickening in no uncertain way in this great Dominion, of which beautiful Toronto is its second important city. The Society has received influential support of the most practical kind, each and all showing a real personal interest in its work. It has received a charming letter of encouragement from the first patrons, the Governor-General H.R.H. the Duke of Connaught and the the Duchess of Connaught. Among forty other influential patrons and patronesses whose names are well known in England are the Chief Justice of Ontario, Sir William Meredith, Lady Meredith, Sir Henry and Lady Pellatt, the Lieutenant-Governor of the Province, Sir John Gibson and Lady Gibson, Sir William Osler, M.P., Judge Osler, E. K. Armour, K.C., Sir William and Lady Mackenzie, Lord and Lady Hyde, and J. T. Moore, Esq. The President is Mr. E. T. Cook, formerly editor of *The Garden.* Canada should be a land of Roses, as the President pointed out in his opening address, and Mr. J. T. Moore has a collection of over 7,000 plants in his picturesque garden in this city, including most of the novelties that have been raised in Britain. British Queen is one of the latest additions. The horticultural trade between the Dominion and the Old Country is increasing, and the future is full of great possibilities. The Society seeks to interest all in the Rose, from those with a little garden to those with many acres. It is the intention to hold three exhibitions each year of pot Roses, which are magnificently grown in Toronto in the spring, and the others in the summer and autumn. The most encouraging feature of the enterprise is the enthusiasm which it has evoked. *Canadian Correspondent.*

ANDROSACE TIBETICA.

THIS charming little Alpine (see Fig. 154) received an Award of Merit at the meeting of the Royal Horticultural Society on April 15, when specimens were exhibited by Messrs. James Veitch and Sons. The plant was collected in the province of Kansu in Northern China by Mr. Purdom. In habit it is somewhat like the Himalaya A. sempervivoides, but it has broader leaves, and the whole plant is more softly hairy in the way of A. villosa. The leaves are produced in rosettes, and are about ¾ in. long, spathulate, and about ½ in. broad at the widest part when fully developed. New rosettes of leaves are produced on short stolons, which arise at the time of flowering. The hairy flower stems are about an inch long, and bear umbels of six to nine flowers on long pedicels. The flowers are white, with a yellow eye, and are about ⅜ of an inch across. The type of this species is a native of Tibet, and has narrower leaves than the plant here illustrated. Forms of it are also found in different parts of Western China, and the Kansu form according to Pax in his monograph of the genus is known as A. tibetica var. Mariæ. It is an interesting addition to a popular genus, and will prove to be hardy when grown under the same conditions as A. sempervivoides and A. villosa. *W. I.*



FIG. 154.—ANDROSACE TIBETICA: FLOWERS WHITE.

ORCHID NOTES AND GLEANINGS.

BULBOPHYLLUM PATENS.

Flowers of this rare and pretty species imported from Borneo by the Hon. N. Charles Rothschild, Ashton Wold, Oundle, are kindly sent by his gardener, Mr. C. Wright. The plant is of scandent habit, with small, imperfectly produced pseudo-bulbs bearing solitary leathery, green, elliptic leaves. The flowers, which are produced singly from the rhizomes on peduncles 1 inch long, are about 1 inch across, of firm substance, yellowish, closely spotted with red, the curious fleshy linear lip being crimson. It resembles B. macranthum in many respects, but the lip is very different from that of the latter species. It has a clove-like scent. Like others of its section, it grows best on a block or raft suspended in a warm, moist house.

LÆLIO-CATTLEYA APHRODITE SPLENDENS.

This fine example of the Orchidhurst strain raised by Messrs. Armstrong and Brown, which secured an Award of Merit at the Chelsea Show of the Royal Horticultural Society, was accidentally left out of our list of awards on p. 351. Specially fine varieties of Lælia purpurata and C. Mendelii were used in securing this fine strain, which made a great show in the effective group staged by Messrs. Armstrong and Brown. Distinguishing features are the broad sepals and petals, varying from blush-white to rose, and the intense ruby-crimson labellums. The variety named splendens is one of the best.

ODONTIODA CUPID (ODONTOGLOSSUM RAMOSISSIMUM × COCHLIODA NOEZLIANA).

Sir Jeremiah Colman, Bart., kindly informs us that the Odontioda recorded from his collection, May 17, p. 323, as O. Venus, should have the above name by right of priority.

ODONTIODA PENELOPE.

This very remarkable hybrid between Odontoglossum Harryanum and the widely separated Cochlioda sanguinea was shown in the fine group of Messrs. Armstrong and Brown, Orchidhurst, Tunbridge Wells, at the Royal Horticultural Society's Show at Chelsea, and although not so showy as the hybrids of C. Noezliana it is very interesting. The flowers are about 1½ inches across, the segments broad, and nearly equal and uniformly coloured rosy-mauve, the column being white. There is no trace of the blotching of O. Harryanum unless the flower is held up to the light, when paler tints between the darker colour can be seen. The ovate acuminate lip is apiculate and reflexed at the tip.

A DALMATIAN IRIS HUNT.

(Concluded from p. 339.)

From Carlopago northwards the so-called Iris illyrica is plentiful. By the kindness of a friend in Zengg, who seems to know every inch of the country, I was able to see the plants in flower along the sides of the valley, at the mouth of which Zengg is situated, and also just coming into flower but dwarfer, high up on Mount Veljun. Among the plants, which I saw in flower, there was considerable colour variation, and I even found specimens with the dark bluish beard, the origin of which in some garden pallidas had always been a puzzle to me. I. illyrica is practically an enlargement of I. Cengialtii, and the Zengg plants certainly provided an intermediate step between the latter and the Ragusa pallidas. I. illyrica was first described as coming from the island of Veglia. I therefore set out from Fiume, and got across by boat to the island from Cirkvenica. I went right across the island which consists of rolling, stony ground, in most places covered with scrub. Everywhere grows the usual green-flowered Helleborus, while the undergrowth was in many places pink with Cyclamen repandum (hederæfolium). Some open, grassy patches were literally purple with Orchis morio, while O. punctata and the huge O. militaris were also common. Of Irises I saw no trace until I reached the centre of the island, and then only found a few flowerless plants among the stones. The foliage, however, leads me to suppose that they are the typical I. illyrica.

From Fiume I also went up to the top of Monte Maggiore and found Iris graminea growing in open beech copses at about 3,000 feet. The plant does not there make the dense clumps that are formed in our gardens, but each tuft of leaves stands apart, and I even found rhizome which had run straight ahead for a foot or more without branching at all. I had seen the same thing in a very similar position on Mount Veljun.

On my return to Trieste I was taken by Dr. Marchesetti to see the botanic garden which he has formed on the hillside above the town. The space is relatively small, but the limestone which is everywhere abundant has lent itself to the construction of innumerable narrow terraces, in the pockets of which all the local plants find congenial homes. My guide also told me of three localities near Trieste where I. illyrica is to be found growing wild.

On Monte Spaccato I wandered for two or three hours, and, though I found an amazing number of Orchis, a poeticus Narcissus, the dark pulsatilla-like Anemone montana, and even Solomon's Seal and Paeonies in flower, I could



Fig. 155.—OLEARIA CHATHAMICA: RAY FLORETS WHITE, SLIGHTLY TINTED WITH MAUVE; DISC PURPLE.

(R.H.S. Botanical Certificate on May 20, 1913. See page 357 *ante*).

find no trace of Irises. It seemed as though the efforts of the Austrians towards reafforestation had been fatal to them. I searched every open space in the wood that now clothes the summit, but in vain; it was only when I came out of the wood again on to the meadow-like land that I found two flowerless plants.

The next day I was able to get to the other localities, and in both found I. illyrica flowering in quantity. In each case the plants were on almost perpendicular rocks facing south-west, and the plants were certainly smaller than those I had seen at Zengg. Indeed, they were very little larger than I. Cengialtii. The stems bore about three or four flowers, and the spathes were of that curious brown-scarious colour, with a purple line across the base, that we find in the Loppio form of I. Cengialtii. It was curious to notice also that in one place all the plants bore flowers of a very rich dark violet colour, while in the other locality each plant differed a little in colour from its neighbour.

As regards the origin of the typical I. pallida, the results of my search are therefore merely negative. I feel convinced that neither the type nor the variety dalmatica occurs wild along the coast between Fiume and Gravosa. On the other hand, the fact that the Trieste plants were slightly bigger than I. Cengialtii, those that I saw at Zengg somewhat larger, and those at Ragusa larger still, and a closer approach to typical I. pallida, seems to suggest that the home of the latter must be even further south, possibly in Albania or in Greece.

If I have used the name illyrica, it is because until seeds have been obtained it is impossible to say whether the plants are to be considered as a separate species or whether they are to be assigned to I. Cengialtii or to I. pallida. Of these, the former has greyish, almost spherical seeds, while those of the latter are dark red-brown and compressed.—*W. R. Dykes.*

FORESTRY.

YEW-WOODS AND BEECHWOODS ON THE CHALK.

Mr. TANSLEY states (p. 173) that he and Mr. Rankin "dismissed the idea of beechwood succeeding yew-wood for the obvious reason that the shade cast by Yews growing together is too deep for the establishment of Beech seedlings, or, indeed, as far as we have observed, of any flowering plant." But gaps will necessarily occur from time to time even in the densest yew-wood, owing to the death of a tree or large branch from old age, disease, or damage by storms; and these gaps may be filled by the Beech or the Ash, provided that fruits of these trees capable of germination are present on the ground at the time when the gaps occur. This condition would be fulfilled as regards the Beech, where a beechwood occurred on a slope above the yew-wood; and the latter would be converted in time into a mixed beech and yew-wood.

We agree that the whole question of the former distribution of plant associations on the chalk downs is involved. Now, the subject may be approached in two different ways: by arguing on general grounds as to what associations would replace others under given conditions; and by studying the present vegetation in a limited tract of country, and endeavouring to reconstruct the original vegetation from the portions that remain. The chalk escarpment is a favourable field for this investigation, as its vegetation has undoubtedly been far less modified by man's influence than that of the surrounding country. From careful study on these lines of the escarpment of the Chiltern Hills between Dunstable and Princes Risborough, and that of the North Downs between Dorking and Guildford, we have arrived at the following general conclusions as to the former distribution of plant associations in these particular tracts of country:—

1. On the top of the escarpment, stretching in the direction of the dip, there appear to have been extensive heaths, with much heather and some gorse.

2. The upper and steeper part of the escarpment appears to have been occupied by chalk scrub. In some cases this was represented by an almost pure Juniper association.

3. Below the chalk scrub came almost pure yew-woods.

No doubt in many places the chalk scrub was represented on the top of the escarpment, and where the slope of the escarpment was fairly gentle it may have been covered by continuous yew-woods extending to the top and some distance beyond, but on the whole the three formations of heath, chalk scrub and yew-woods seem to have been distributed as stated above.

The following considerations lend support to our conclusions:—

1. Many of the woods now existing on the relatively flat ground at the top of the escarpment, or a mile or two away in the direction of the dip, are obviously in the nature of plantations. Patches of heather more or less unhealthy and undoubtedly dying out are to be seen here and there in these plantations, occurring in some quantity where the trees are still young and cast little shade, more scattered and moribund in older parts of the woods, and absent from considerable areas where the shade is deepest.

Heather occurs also on the strips of turf by the side of the country roads, and, along with gorse, in the broad grassy lanes so characteristic of the Chilterns. These grassy lanes contain many more wild plants than the country which they intersect, which is largely parcelled out into fields, and they afford valuable indications of the nature of the former vegetation.

In addition to the patches mentioned above, considerable stretches of heath still exist in the areas under consideration, especially on the North Downs, and anyone familiar with the two districts can hardly escape the conclusion that heaths were formerly very widely distributed on the tops of the hills.

2. The sites of numerous ancient hill-top camps are now occupied by small beechwoods which, but for their situation, might appear natural on superficial examination.

The walls of the large Danish camp at Cholesbury (in the same area) are covered by fine Beeches which mask the camp so completely that its existence would be unsuspected.

3. Where beechwoods occur on the top of the escarpment, they can be determined in some cases to be plantations by simple inspection, but the most valuable evidence as to their origin is the effect which they produce on the chalk scrub below them. An excellent example may be seen above Streatley (opposite Goring). The top of the hill is occupied by a beechwood which is invading the mixed chalk scrub immediately beneath it. There are numerous young Beeches in various stages of development which have sprung up at the base of the shrubs in the upper part of the chalk scrub. The continued growth of these Beeches will necessarily entail the death of the shrubs underneath, and it can be only a matter of time before the chalk scrub is replaced by a beechwood, which will eventually spread downwards among the old Yew trees which occur on the slope below the chalk scrub.

Now, if the beechwood had been in existence for a long time the invasion and replacement of the chalk scrub by the Beech would have been complete.

Good examples of invasion of chalk scrub by Beech may be seen in many places along the escarpment of the Chilterns, e.g., on Pulpit Hill, near Great Kimble.

4. The patches of yew-wood on the lower part of the escarpment are very often succeeded immediately below by cultivated land, the lower limit of the wood being the upper boundary of the fields. Isolated old Yews occur not uncommonly in the middle of the fields, indicating that the yew-woods formerly extended further down the slope. The area of the pure yew-wood appears, therefore, to have been diminished in two directions; above, by the invasion of the Beech; below, by the extension of cultivated land.

To sum up, the change in the distribution of the vegetation is due, according to our view, to economic causes. With the spread of agriculture, the forest which formerly covered the fertile plains stretching from the foot of the escarpment were gradually cleared and replaced by cultivated land; and plantations of Beech (and to a less extent of other trees) were made on the poorer soil on the top of the escarpment. The more ancient of these plantations may well have extended themselves naturally down the escarpment, as described above, eventually reaching the yew-belt and converting it into a "beechwood possessing numerous Yews." *T. A. Sprague.*

THE IDEAL ROCKERY: ITS CONSTRUCTION.

V.*—MORE ABOUT STONES AND SOIL.

IT is not wise to order stones of a very large size, as there may be a difficulty of handling them, unless the necessary apparatus exists in the garden. At the quarry they can easily load blocks weighing from 10 to 20 cwt. in carts, but these large stones are not necessary. Those from 2 to 5 cwt. are generally large enough for the major portion of a rockery, and may be handled quite easily by two or three men.

We should therefore be particular about the few large blocks required for certain positions. It is indeed fortunate if they are to be obtained so deeply furrowed or indented as to allow of their being planted with Sedums, Sempervivums or Saxifrages. If they have smooth surfaces, all that is left to us is to select them with a view to planting behind, allowing a good depth for the roots, and letting the plants hang over the stones as much as possible.

Stones of very decided or bright colours should be avoided. The rocks are, after all, only a background for the plants, and the vast variety of colours of the flowers demands a settling as neutral in tint as possible. For instance, Silene Schafta against a bright red sandstone, or Erigeron aurantiacus against a yellow one, would appear quite dull. This caution is necessary, as I have known these brightly-coloured stones to be recommended by certain experts.

If we examine minutely an average sample of soil obtained from ground at a very high level—earth that we know supports Alpine plants—it will generally be found to consist of a finely divided mixture of black, peaty mould and sand, the product of the decay of generations of plant life, together with dust or sand formed by the gradual disintegration of the rocks.

Soil of this kind retains sufficient moisture for plant-life by reason of the peaty mould, and the sand ensures drainage. Although our coarse, lowland peat is not exactly the same as that from the Alpine regions, we can make a mixture suitable for the majority of Alpines by imitating as nearly as possible the natural soil. A mixture of rich loam, leaf-mould, peat and silver sand in equal quantities will form a suitable compost, but as this would not be the cheapest of rockery-soils, it might well be used for the choicer plants only.

I find the blacker, woodland peat to be far superior to the more fibrous, browner and richer-coloured peat obtained from the southern moorlands, which, although for most purposes the more valuable, is probably not suitable for Alpines on account of its extreme coarseness, and not being so readily mixed, nor so much rotted as the former kind.

* The previous articles appeared in the issues for March 1 March 8, March 22 and April 19, 1913.

A pint of bone-meal added to every barrowload of the mixture would make the soil richer. Very many plants, of course, require a different soil, but unless we intend devoting a considerable portion of the rockery to these we may ignore their wants during the process of construction.

Besides peat, loam, sand and leaf-mould we shall require for top-dressing a liberal amount of some kind of "grit," a word generally used to designate any kind of rock pulverised to small lumps or flakes. If we followed Nature closely we should use the same kind of material as that of which our stonework is composed, but it sometimes happens that for the sake of increased artistic effect or for the benefit of the plants we can do better by employing some alien grit—for instance, hard, bluish flakes of mountain-limestone or serpentine on a rockery of white Kentish rag. Another reason for the use of a foreign top-dressing in this case would be that we should not be able to obtain suitable flat-lying flakes from the rag.

Where material quite free from lime is desired millstone grit is the best, but where the true mountain-limestone is used little, if any, of other kinds will be needed, as even peat-loving plants take no harm from it.

Smooth, pebbly gravel from river-beds is not advisable, both because its worn appearance is out of place on the higher parts of the rockery and because of its general failure to fulfil the great purposes for which it is required, namely, to keep the soil moist in very dry weather, drained in wet weather, to preserve prostrate flowers from splashing by heavy rains, and to check snails. *J. Wood, Boston Spa.*

VEGETABLES.

EARLY CABBAGE.

Spring Cabbages are unusually late this season, and the crops are not as good as they might be. The earliest variety was Early Market, which has a well-shaped conical head, and next in order came Carter's Beefheart, Wheeler's Imperial and Flower of Spring. These were sown the last week in July; the August sowings were scarcely any use, not being early enough. Last year the July sowing was too early, and it was the August one which was most useful, so it seems impossible to establish a rule.

At Leonardslee we usually plant Early Cabbages after the main crop of Onions. The soil is so well trenched and manured for the Onions that even after they are taken up the soil is in perfect condition and the second crop is almost as good as the first. To obtain good supplies of young Cabbage several sowings should be made during the season. *W. A. Cook, Leonardslee, Horsham.*

FOREIGN CORRESPONDENCE.

FRUIT FARMING ABROAD.

Your editorial comments in the issue of March 29 on the article published in the *Times* anent the failure of the Kent or Worcestershire men to make good out here at their own profession of fruit-growing are just to hand, and, as you invite comments, I am offering a few in the attempt to corroborate in a way the facts as they appear to one who, having trained in some of the best English gardens, including Trentham under Stevens, Eaton under Selwood, and some others, and having spent twenty-five years in the United States, all of this time being in charge of men whom, to be experienced, must have had their training in British gardens, it may be of interest to you at home to know how the average imported gardener works out his salvation here.

To have success here it is not at all a question how much a man knows as it is how quick he can forget most of it, and adapt the little knowledge of use to the greatly changed conditions with which he will come in contact here. We often meet men, and sometimes have them in our charge, who continuously tell about the way they did things in "the Old Country." There is not much hope for such; their future is behind them.

American horticulture is a type, and must be regarded as such. We get results that are not equalled elsewhere, whether it be fruit culture, the growing of flowers under glass, or the growing of grain on the prairies, and he who comes to scoff, if wise, will remain to pray for more light. There is no recognised system of apprenticeship, and the far-off days of pot-crocking and potwashing recur only as a nightmare. The beautiful formulæ one often sees for the mixing of soils in home periodicals are a thing unknown, and serve only as a reminder of a doctor's prescription.

Climatic conditions are responsible for most of our results, as well as the changes in methods, and a comparatively small distance here will compel the cultivator to alter his view-point; therefore he must be facile. And here is the trouble oftentimes.

It is still true, as you say editorially, that "the astute American was employing, and still continued to employ, an English foreman," while deprecating his ability, or the ability of his class as a whole. Here is where a second explanation may be offered. It is that of temperament—in the sense that is applicable of the whole people here—that they will take up, even late in life, an entirely new phase of work without previous fitting, and make a success of it. It is not uncommon to see "the clerk or professional man, who starts admittedly knowing nothing about it, who, of the newcomers, makes the best fruit farmer; while the man from Kent or Worcester fruit districts is usually the most hopeless case." Success is largely due to the astuteness that prompts to an accurate study of the soil constituents, the proper fertilisers to use, when to apply them, and for what desired end, whether for flavour, colour, or size of fruit, and in the irrigated districts the proper amount of water to apply and when to give it. Most of this is available at the various State experiment stations to those who wish to have it, but the average gardener has a horror of the college professor, and will not accept his services even gratis. The owner then has to absorb the information and hand it out in homœopathic doses as fast as it is proven or capable of assimilation—often a very slow process.

The State experiment stations are horticultural as well as agricultural colleges. Young men get thorough training in either free of charge, and these go out into the various branches of our profession and make good. They make mistakes, it is true, but are quick to profit by them. Best results are generally attained after some failures. When you, Mr. Editor, reason "that differences between fruit-growing in the dry belt of British Columbia and in Kent or Worcester are not so great as between Turnip and hot-house Grape culture," it makes one wonder how it is that certain fruit-growers in the different English counties disagree so much as to the vest varieties of Apple to grow. If it is the soil conditions, very good; but add to this the vastly different climatic conditions, with, say, no rain during the greater part of the growing season, it would seem that your simile is clever, but not correct.

We are taking hosts of British gardeners every year, making them over as fast as we can, and they are to-day the backbone of the profession here and in the British part of North America, and their success can invariably be attributed to adaptability.

The writer has been in constant touch with the *Gardeners' Chronicle* for the past thirty-five years. Its tone and spirit are in step with the times we live in, and we want you, Mr. Editor, to be able to see things correctly. *E. O. Orpet, Lake Forest, Illinois, U.S.A.*

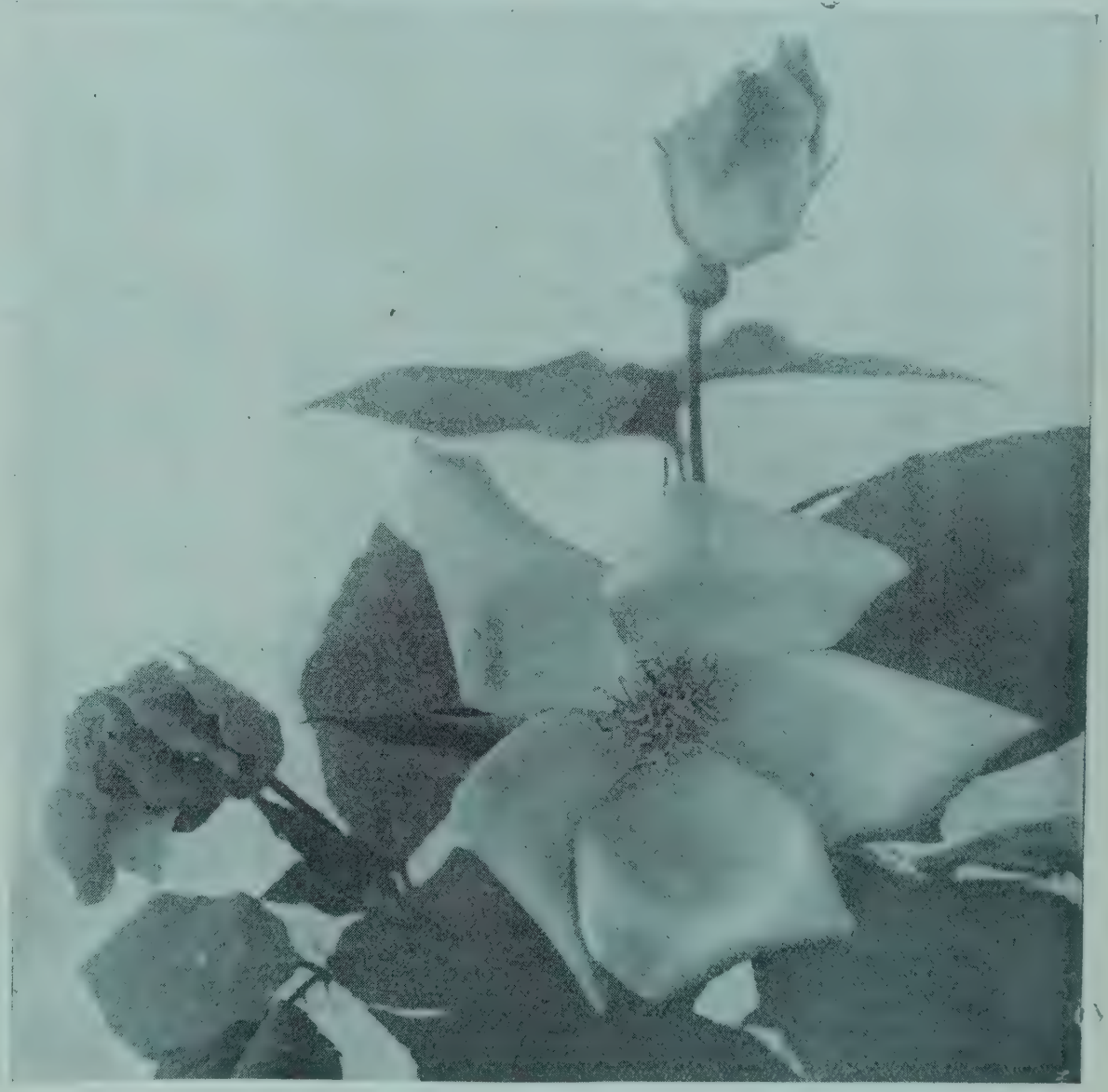


Fig. 156.—Rose Irish Fireflame: petals a shade of apricot.
(Received R.H.S. Award of Merit on May 20, 1913. See p. 357 *ante*.)

The Week's Work.

THE ORCHID HOUSES.

By W. H. White, Grower to Sir Trevor Lawrence, Bart., Burford, Dorking.

Plants in Flower.—Now that many Orchids are in bloom it may be advisable to caution growers against allowing the plants to carry their flower-spikes for too long a period. After the flowers have been open a reasonable time it is better practice to cut off the spikes than to allow them to remain until the pseudo-bulbs commence to shrivel, as badly shrivelled plants require much care for a long time to bring them to their former plump condition. Small, weakly plants invariably deteriorate if they are allowed to bloom, and the spikes should be removed immediately they appear and the plants rested before gradually starting them into growth again. Endeavour to get the plants stronger each succeeding year until they are capable of developing a good spike of bloom without causing undue shrivelling of the pseudo-bulbs.

Miltonia, Masdevallia and Lælia harpophylla.—As plants of Miltonia vexillaria pass out of flower they should be removed to a cool, shady position in the intermediate house or the warm end of the Odontoglossum house, affording the roots but little water till growth recommences. If the compost be kept excessively wet whilst the plants are resting during the next two or three months, the roots would soon perish. Plants of Masdevallia Chimæra and its varieties that have been wintered in the intermediate house should be removed to the cool house. Suspend them if convenient immediately over the pathway, where they can be well syringed overhead without wetting the other plants in the house. These Masdevallias should be well supplied with water at the roots, especially during hot weather. As the plants of Masdevallia tovarensis that were re-potted in March become well established in their new compost they may be removed to cooler quarters. Lælia harpophylla should also be grown in a cool house until growth recommences.

THE FLOWER GARDEN.

By Edward Harriss, Gardener to Lady Wantage, Lockinge, Berkshire.

Summer Bedding.—When everything is ready for making a start with summer bedding it is wise to utilise as much labour as can be spared from other departments so that the work may be finished with the least possible delay. Summer-flowering plants should be set fairly closely together to secure an immediate effect, but in planting large beds the centre or back of the beds need not be planted so closely as the front or outside. Should the weather be dry water the plants well and sprinkle them with water late in the afternoon. This precaution is especially necessary for plants in vases or boxes, and spraying should be continued until they have become established. In selecting plants for filling vases the colours of the flowers in their immediate vicinity must be taken into account. There is a danger in using too many kinds of plants for this purpose. Vases filled entirely with Pelargonium Paul Crampel are always striking objects. Others may be planted with Ivy-leaved Pelargonium Madame Crousse or Souvenir de Charles Turner. Other plants suitable for furnishing vases or window-boxes are Marguerites, Calceolaria amplexicaulis, Fuchsias, Begonias, Verbenas and Lobelias, especially spreading plants of the last named, which are admirably adapted for the purpose. Dracæna indivisa is a useful plant for furnishing large vases. Kentia Balmoreana is also suitable, but this Palm must be hardened gradually or the foliage will "burn" when exposed to bright sunshine. The soil for filling vases and boxes should be of a rich nature and it must be rammed fairly firm. Violas are useful plants for covering the ground between taller-growing subjects, but care must be taken that the colours do not clash. Violas require plenty of moisture and the old flowers must be pinched off regularly.

Ghent and Mollis Azaleas.—Where the soil is suitable for these plants they should be grown freely in the pleasure grounds. During the latter part of May and early in June the flowers make a gorgeous display, whilst in the autumn the foliage assumes brilliant colouring. Although Azaleas are striking objects in shrubberies, perhaps the best effect is produced by massing them on the grass within sight of the house. They are also useful for furnishing cut blooms, especially for table decoration. After the flowers are over remove the dead blooms, and if it is considered that the plants are in need of stimulants water the roots with diluted liquid manure. If the natural soil is not suitable stations may be made for planting by removing a portion and replacing it with peat or leaf-mould, trenching the ground deeply and well incorporating these materials with it.

Flowering Shrubs.—Certain of the spring-flowering shrubs should be cut hard back after flowering. Ribes, which flowers profusely on the previous year's growths, Forsythia suspensa and Chimonanthus fragrans may all be pruned now.

THE KITCHEN GARDEN.

By John Dunn, Foreman, Royal Gardens, Windsor.

Late Peas.—In order to provide crops of Peas throughout September and October, weekly sowings should be made from the beginning to the middle of June. Late Peas are apt to be attacked by mildew, which is most prevalent in dry weather, and especially in light soils. The best means of preventing mildew are deep trenching, manuring and mulching; the ground should be trenched and manured in winter, and left unplanted until the Peas are sown. Late Peas are sometimes sown in ground which has been occupied with other crops during the spring. This is a mistake, as it often happens that the top spit of soil, which is turned undermost during the trenching process, has become so dry that it is not possible properly to moisten it. The Pea is a gross-feeding plant, and requires plenty of moisture at the roots, especially throughout August and September. Dryness of the soil not only causes mildew, but also checks the growth of the pods. The plants should be watered copiously in dry weather and the ground between the rows mulched with farmyard manure. The best varieties for late sowing are Autocrat (a well-known mildew-resisting variety), Distinction and Rearguard. The last-named variety is of comparatively recent introduction.

Potatos.—Many late varieties of Potatos are ready for earthing up; but first of all the soil between the rows should be broken thoroughly with a fork—carefully, in order to avoid injury to the roots. A dressing of Potato manure may be applied before the soil is disturbed. In drawing the soil up to the stems of the plants avoid sharp ridges, especially on light soils, or the rains may not reach the roots.

Carrots.—Young Carrots growing in borders should be ready for thinning. Allow a distance of 3 inches between each plant in the row. Light dustings with soot will be beneficial, and the Dutch hoe should be constantly at work among the plants to promote free growth and destroy weeds. Frequent small sowings of a stump-rooted variety should be made to furnish a succession of young roots, and to avoid drawing upon those sown for use in winter.

Celery.—The pricking-out of young Celery plants should be continued, so that when the main crop is to be planted there may be plenty of young plants ready for the purpose. Trenches should be prepared at once and a good supply of farmyard manure placed in the bottom of each. The soil in the trenches should first be thoroughly broken, and over the manure a 4-inch layer of the best soil should be placed.

Endive.—A sowing of green curled Endive should be made at once for use in August. As soon as the plants are large enough they should be thinned to a space of one foot between each; the seedlings may be transplanted as required to succeed those left in the seed-bed.

PLANTS UNDER GLASS.

By F. Jennings, Gardener to the Duke of Devonshire, Chatsworth, Derbyshire.

Cyclamen.—Young plants of Cyclamen which have been growing in 3-inch pots are ready for their final potting into 4½ or 5-inch pots. The compost should consist of rich, fibrous loam with the addition of equal parts of leaf-mould and coarse sand, also a little decayed cow manure and wood ashes. The old, sour soil should be removed from the surface of the pots before re-planting. The corm should not be buried, but kept just at the surface of the soil which should not be pressed too firmly. When potted, the plants should be placed in a heated frame, either standing them on ashes or plunging them in coco-nut fibre as near to the roof glass as possible. The roots should be soaked with water and the leaves syringed both night and mornings. Until the plants begin to form roots in the fresh soil they should be kept close and shaded from the full heat of the sun. As the season advances the syringing should be done late in the afternoon and the frame closed for about an hour, then gradually ventilated, on warm, dewy nights the lights may be removed entirely to be replaced in the morning shading the plants before the sun is too warm. When the roots are re-established they should be fed with liquid cow manure or with a mixture of soot and Clay's Fertiliser. During the young stage the foliage is frequently attacked by green caterpillars; plants thus affected should be dipped in an insecticide. The house should be fumigated at regular intervals to destroy aphides or green fly.

Mignonette.—A batch of seed sown in pots now will produce plants that will flower early in the autumn. The seeds should be sown in 7-inch pots. Thin the seedlings to about six or eight in each pot. The compost should consist of a mixture of loam, leaf-mould, mortar rubble and a little wood ashes. The pots should be placed behind a north wall on an ash bottom, shaded from the sun during the hottest part of the day. As the seedlings develop they should be well syringed night and morning. The early flower should be removed until the desired symmetrical shape has been obtained, when the blooms may be permitted to develop. Place feathery pieces of Birch around the edges of the pots to support the plants. The roots should be fed freely with artificial manure. If the Mignonette is required for cut blooms the spikes should not be removed too low down; if possible, all the flowers should be taken from the same plant. When all the blooms are cut the denuded plants should be placed in a gentle heat and well fed and syringed, which will result in a second crop of flowers. The old, sweet-scented variety does well, but finer heads may be procured from the newer sorts.

THE HARDY FRUIT GARDEN.

By B. Goodacre, Gardener to Sir Ernest Cassel, Moulton Paddocks, Newmarket.

Pear Trees on Walls.—Extra vigorous and unnecessary growths should be removed from Pear trees trained to walls. Wall Pear trees are now largely grown as horizontal and fan specimens; the former are better for ordinary walls, but where only an odd corner or the end of a building has to be furnished, the fan tree is preferable, as it furnishes the wall much more rapidly, and only the top fruits are likely to be of service. Horizontally trained trees should have the branches arranged not closer than 12 inches apart, and the first pair of branches should be 15 to 18 inches from the ground. Although many advise training the branches closer, it is not to be recommended, as it is important for the sun's rays to reach the wall, and, as soon as the tree has grown to the height of an ordinary wall, it will furnish an ample crop of fruits from branches trained at the distance I recommend, whilst the quality will be superior. In training young trees it is an advantage to place the branches

pointing upwards away from the cold ground. By this method they will not only grow stronger but cleaner their first season than if nailed nearer the bottom of the wall. It will always be found that the topmost branches will grow and break more readily than the lower ones, as not only is the flow of sap directed to them, but they receive more warmth. For this reason the topmost branches may be more severely pinched or disbudded, and this work should always be commenced on them. It is even more essential with horizontally-trained than with fan-shaped trees. If the time can be spared, it is an advantage to allow a few days to elapse between the pinching and stopping of the upper and lower branches of horizontally-trained trees. Fan-trained trees should receive much the same treatment as is afforded the Apricot and Plum. Black and green aphides will soon make an appearance on the ends of the shoots, and should be destroyed by syringing with insecticide. Leaves that are infested with Caterpillars or the Pear Moth should be gathered and burned.

Early Strawberries.—The earliest strawberries, growing on sheltered borders facing south, are either in full flower or have their inflorescences well advanced. These early plants will repay for a little extra care, such as covering them during times of very cold weather, watering, manuring and thinning of the fruits. Their fruiting may be hastened by a week or a fortnight if they are covered with lights arranged on thick planks placed on their edges, setting the planks a few inches higher at the back than at the front. During several seasons the earliest blooms have been damaged by frost, and especially the crown flower, which always produces the finest fruits. The lights being only placed temporarily may be removed quite easily during times of rain or when there is a danger of the sun scorching the plants.

Pears.—Where the crop is a good one not more than one fruit should be left on each spur, except in the case of the stronger-growing early varieties, such as Williams's Bon Chrêtien, Beurré d'Amanlis, and Marguerite Marillat, or small-fruiting varieties with strong stalks, such as Comte de Lamy, Seckle, or Bergamotte d' Esperen, when two good clean fruits may be allowed to ripen.

PUBLIC PARKS AND GARDENS.

By Superintendent.

How to Improve the London Clay.—In many of the London parks, squares, and gardens the soil consists mainly of a stiff, cold, unkindly clay, or, failing this, a bluish medium that may best be described as midway between mud and loam. Both soils are inimical to plant growth and require special preparation before trees and shrubs, in fact, any kind of vegetation, will succeed when planted in them. As examples, Regent's Park and Primrose Hill might be pointed out, in which the unmanageable treacherous clays extend over an area of some 500 acres and to a depth of from 182 feet to 350 feet. As showing the composition of this soil the following analysis by Professor Way of the London clays taken from average samples in Regent's Park will be interesting :—

Organic matter and combined water ..	5·47%
Sand	12·35%
Clay	79·39%
Lime	2·79%

In many of the London squares and gardens the soil is somewhat of similar composition and requires timely preparation before tree or shrub planting can be successfully engaged in. Thorough drainage should take precedence of any other operation in the reclamation of many of our London clays, and in order that the most beneficial results may be obtained, comparatively shallow drainage is to be recommended. Where the planting of large trees at far distances apart is to be carried out it may only be necessary to enrich the soil at the particular spots at which the trees are to be inserted, whereas in the formation of a shrubbery the case is quite different, for the whole area of ground will require trenching and enriching, and the same usually holds good in the town garden. Where large standard trees are to be planted, holes about 9 feet wide and a yard deep should be dug out, and the bottom and sides of each thoroughly loosened with a pick. The quality of soil removed will be a good guide as to what amount of enriching will be required, some classes of clay being in this way more readily dealt with than others. Could the holes be made and the soil left exposed to the ameliorating effects of a winter's frost great good would be brought about, but this, for various reasons, is quite out of the question in our public parks and gardens. When the soil is found to be of a very inferior nature, as is frequently the case in the north-west of London, nearly the whole should be removed, and a suitable compost of loamy or other soil substituted, though occasionally the retention of a small quantity of well-broken-up clay is to be recommended. In the case of a shrubbery, and where a thorough system of trenching and breaking up the whole of the soil is carried out, a heavy admixture of decayed manure and vegetable matter or screened street sweepings will often suffice. Light soil of almost any description and lime or lime rubbish will greatly improve heavy, adhesive clays, and burning, too, is to be recommended. Heavy top-dressings of sifted ashes are valuable, so also are street sweepings, but with the latter care is necessary to avoid using such as are impregnated with creosote, or any of the tarred compositions with which the roads are now repaired. Finally, sifted ashes from gas works have a wonderful effect on lawns and grass plots, but particularly such as are on heavy clays and soils that are naturally damp. In deep trenching short grass, leaves and weeds of all kinds may with advantage be used for enriching the soil, but they must be buried sufficiently deep so as to become thoroughly decomposed before the roots of the trees or shrubs come in contact with the compost. Where there is an accumulation of sweepings, path edgings, grass and leaves, it will be found wise economy to have such collected in a heap, and converted into manure for use in connection with the formation or enriching of shrubberies. The heap should be turned occasionally, and a small quantity of fresh lime added, which will not only sweeten the compost, but help to destroy the seeds of weeds.

FRUITS UNDER GLASS.

By James Whytock, Gardener to the Duke of Buccleuch, Dalkeith Palace, Midlothian.

Pineapples.—On bright, sunshiny days the houses in which the Pine fruits are swelling may be shut at 4 o'clock in the afternoon. For an hour or two the temperature may be raised to 90° or 95°; the plants should be gently sprayed overhead, but not heavily syringed. Damp the paths and all available surfaces in order to maintain a moist atmosphere. The night temperature should be 70° to 75°, according to the weather. If the plants are plunged over a hot-air chamber the bottom heat may be regulated easily, and should be maintained at about 90°. Watering must be done with discretion, as whilst drought is harmful an excess of moisture must be avoided. The plants should be examined twice weekly, and if they are in need of moisture weak manure water, made preferably with guano, may be given. Plants carrying fruits which are colouring and ripening will need more air, and the roots should be moistened with just sufficient clear water to prevent drought. The atmosphere should also be kept drier. If it seems likely that more Queen Pines will ripen at the same time than are needed, some of the plants should be removed to a cool house or pit. In this way they will ripen more slowly, and may be kept for a month. Succession Pines which were transferred into fruiting pots in February should be growing freely, and now that the sun is so warm the night temperature may range from 70° to 75°, according to the weather. The ventilation should also be increased, especially in the early mornings of sunny days, allowing more and more air up to mid-day. In the afternoon of every bright day the house should be closed with a temperature 15° above the average. The plants should be slightly syringed overhead, and the paths and wall spaces damped in the mornings and immediately before closing time. Plants which are growing freely will require more water at the roots, and a weak solution of artificial manure may be applied. The water should be only just coloured—guano is the best manure for the purpose. Queen Pines produce a large number of suckers from axils of the lower leaves. These should be removed in the case of succession plants, the object being to get the pots well filled with roots and the foliage well matured by the end of August. Plants of Smooth Cayenne and Charlotte Rothschild, which are being grown to provide fruits during the winter and spring, should be partially rested in May and June. They should be kept a little drier at the roots, and the atmosphere should be dry and well ventilated. At the beginning of July the heat may be increased, the roots watered more freely, and the atmosphere kept damper. Plants of the Smooth Cayenne variety require an unusual amount of water at the roots, on account of their strong foliage. The leaves, too, are very liable to become bronzed in bright sunshine, and should therefore be shaded lightly. Suckers are very scarce in this variety, and should all be saved, as well as the crown, for purposes of propagation. The variety Charlotte Rothschild produces suckers more freely, and is an excellent Pine for winter and spring fruiting. Pine suckers, when large enough, should be detached from the plants, planted in 6-in. pots, and plunged in a bed with bottom heat, shaded from bright sunshine.

THE "FRENCH" GARDEN.

By Paul Aquatias.

Old Manure Beds.—Cauliflowers are occupying the whole space on the old manure beds, and their roots must receive ample moisture from the first appearance of the bud. Cauliflowers will withstand, and be even benefited by, a certain amount of drought till the inflorescence appears, after which they cannot be afforded too much water. Where such varieties as Salomon and Snowball are grown, the first heads are now ready for cutting. Cauliflowers of this type are more in demand early in the season than the bigger sorts, such as Duancourt All-the-Year-Round, and they are more profitable to grow, as eight plants can be accommodated in each light, instead of five.

Melons.—The last fortnight has been very favourable for the growth of Melons, and ventilation has been afforded freely from 9 a.m. till 5 p.m. on the brightest days. Air should be admitted when the heat begins to rise in the frames through sun heat to prevent check to the growth. After a dull period, the development of the leaves, especially in plants growing in light land, is often out of proportion to the growth of the roots, causing the plants to flag during bright days. It is therefore advisable to examine the plants between 11 a.m. and 12 noon, and shade every plant having a tendency to wither by spreading short manure on the glass. This precaution should be adopted until the plants are able to withstand the full glare of the sun with full ventilation. Owing to the moist condition of the ground, great care must be exercised in watering, and the work must only be done early on bright days. Plants of the earliest batch are setting fruits, and ventilation will be necessary even in wet weather. Prune the side shoots to the second leaf. Extra vigorous plants develop growths at the base of the side shoots, and these supernumerary shoots must be removed. As soon as the fruits are of the size of an egg it may be determined which may remain for the crop. Allow one to develop on each side of the plant, and as far as possible from its centre. They must be of even shape and size, and, in doubtful cases, more fruits than are needed may remain to permit of another choice at a later date.

Cucumbers.—The plants have reached the top of the frame and the stem should be stopped at the sixth or seventh leaf, pinching the side shoots at the first leaf. Afford only a moderate amount of ventilation, and take measures to provide shade if the weather remains bright. Though the Cucumber is a moisture-loving plant, watering must only be done when moisture is required.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher. — *Our Correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the* PUBLISHER; *and that all communications intended for publication, or referring to the Literary department, and all plants to be named, should be directed to the* EDITORS. *The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.*

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS, 41, Wellington Street, Covent Garden, London.** *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

Special Notice to Correspondents. — *The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

Illustrations.—*The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.*

Local News.—*Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.*

APPOINTMENTS FOR JUNE.

TUESDAY, JUNE 3—
Roy. Hort. Soc. Coms. meet. (Lecture at 3 p.m. by Prof. O. V. Muller, M.A. on "The Wild Flowers of Mahabaleshwar, India.") Scottish Hort. Assoc. meet. Nat. Amateur Gard. Assoc. meet.

THURSDAY, JUNE 5—
Linnean Soc. meet.

SATURDAY, JUNE 7—
Soc. Française d'Hort. de Londres meet.

MONDAY, JUNE 9—
United Hort. Ben. and Prov. Soc. meet.

WEDNESDAY, JUNE 11—
Birmingham Botanical and Hort. Soc. Orchid Show (provisional).

FRIDAY, JUNE 13—
Nat. Hardy Plant Soc. Ex. at R.H.S. Hall

TUESDAY, JUNE 17—
Roy. Hort. Soc. Coms. meet and Nat. Gladiolus Soc. Sh. (Lecture at 3 p.m. by Prof. G. Henslow on "The Evolution of Plants and the Directivity of Life as shown by Vegetative Structures." Horticultural Club House Dinner.

WEDNESDAY, JUNE 18—
Yorkshire Gala (3 days). Roy. Meteorological Soc. meet.

THURSDAY, JUNE 19—
Linnean Soc. meet. Kilkenny Summer Sh.

WEDNESDAY, JUNE 25—
Colchester Rose Sh. Norfolk and Norwich Rose Sh. (2 days). Southampton Roy. Hort. Rose and Sweet Pea Sh. Croydon Fl. Sh. Mallow (Co. Cork) Sh. (2 days).

THURSDAY, JUNE 26—
Canterbury and Kent Rose Sh.

SATURDAY, JUNE 28—
Windsor, Eton and Dist. Rose Sh. Reigate Rose and Sweet Pea Sh.

MONDAY, JUNE 30—
Newry (Co. Down) Sh.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich—59°.

ACTUAL TEMPERATURES :—
LONDON.—*Wednesday, May* 28 (6 p.m.). Max. 78°. Min. 55°.
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday, May* 29 (10 a.m.); Bar. 29.7. Temp. 75°.
Weather—Sunshine.
PROVINCES.—*Wednesday, May* 28.—Max. 72°, King's Lynn; Min. 53°, Ireland, W.

SALES FOR THE ENSUING WEEK.

WEDNESDAY NEXT—
Hardy Bulbs and Tubers, at 1.30; Palms and Plants at 5. At 67 and 68, Cheapside, E.C., by Protheroe and Morris.

FRIDAY NEXT—
The entire collection of Orchids formed by the late Major Burgess, also imported and established Orchids, at 12.45. At 67 and 68, Cheapside, E.C., by Protheroe and Morris.

The R.H.S. Criticised.

In the golden age of the Antonines it was a custom for those who felt themselves charged with missions of reform to arise during the progress of gladiatorial shows in the Colosseum, and to deliver their comminatory harangues to the assembled populace. With equal art, Mr. Dykes seized upon the occasion of the Chelsea Flower Show to deliver in the correspondence columns of the *Times* a criticism of the Royal Horticultural Society.

Though we may regret the moment, we are bound to give careful consideration to the matter of Mr. Dykes' criticism, and this for two reasons. First, because we recognise that criticism is the chart and compass which directs the course of public opinion, and because it would be a sad day when Britons ignored the exercise of the divine right of writing to the *Times*. Second, because it is certain that in this imperfect world there is room for improvement in any of our institutions, and because we all desire to enlarge the sphere of usefulness of the Royal Horticultural Society. A careful weighing of the criticism, however, involves also a consideration of the general and varied work conducted by this society; for critics as a class manage shade better than light, and the portraits they produce must be compared with the originals before the pictures may be accepted as likenesses. A delineation of Cromwell's warts, no matter how faithfully executed, could not, even in these days, pass for a presentment of Cromwell; albeit, those blemishes must, as the sitter himself insisted, by no means be omitted from the portrait.

Therefore, let us attempt to describe briefly, and in no partisan spirit, the main features of the work of the Society, and then let us consider the bearing of these criticisms on that work. It is common knowledge that the Society has achieved numerical and financial success, and it is also common knowledge that success is an essential condition of other and higher achievement. Next, and bearing in mind that horticulture is at once a trade, an art and a science, it must be admitted that by its hall in Vincent Square, and by its fortnightly shows, the Society has played, with conspicuous success, the part of honest broker between the trade and the public. This is a great achievement, which horticulturists of all kinds must applaud. The benefits to the trade and public are manifest, and those to the scientific horticulturist, though less self-evident, are no less considerable. In conducting its manifold trials of vegetables and other plants at Wisley, the R.H.S. is carrying on the proper and invaluable work of assisting growers, and also the gardening community, to separate horticultural wheat from chaff.

Lastly, by organising the recent show at Chelsea, the Society has done a notable service to gardeners of all kinds. As a result of that enterprise, and almost for the first time in this country, it has been possible for exhibitors to show plants in an artistic manner, and for amateurs to form a leisured judgment of the garden value of the plants exhibited.

We have no doubt that Mr. Dykes is as cognisant of these facts as are all other well-informed gardeners. The gravamen of his charge consists in this, that he would fain see the Society more interested in the purely scientific side of horticulture. So would we all; but many of us would deplore the diversion of the energies and resources of the Society from fundamental to merely auxiliary duties. Nevertheless, we think that the time has come when this rich and powerful society should, whilst still devoting its main energies to horticulture proper, undertake more work of a scientific nature. An advisory committee should be called into existence, representatives of scientific horticulture should be welcomed to the Council, and a well-considered scheme of work should be drafted. Any advance in a scientific direction would, of course, involve a re-modelling of the *Journal*, the official organ of the Society.

To sum up: in our judgment the Royal Horticultural Society has shown insight, as remarkable as sure, into what constitutes the essentials of a society devoted to horticulture. It has achieved success with respect to these essential objects. Its function now should be, whilst maintaining that success, to extend its activities to other important, but less vital, departments of horticulture.

We could have wished to bring our remarks to a close at this point; but, unfortunately, the appearance in the columns of the *Times* of a leading article on the subject of the R.H.S. requires comment; for if the assertions made in the course of that article were accurate they would supply a very serious reinforcement to the criticisms advanced by Mr. Dykes. Happily for the Society and for British horticulture the assertions betray profound ignorance of both. The errors they contain are patent to all horticulturists, though they may mislead the uninformed. Thus, the writer of the article asserts that the R.H.S. "gives more encouragement than it need give to florists, and less than it should to those who discover new species and varieties of natural plants, or who produce new hybrids between them." If this were accurate it would mean that the Society's committees withhold their highest awards from the greater novelties and, whilst ignoring the claims of new species from China and elsewhere, fritter away their principal awards on new varieties of garden flowers. It may be that the critic thinks that it is the province of a horticultural society to award medals and certificates to any new weed introduced from abroad, and if this be the case we would remind him that the Society has the right to require of the plants which it certifies a real horticultural merit, whether they be florists' flowers raised in this country, or wildings introduced from overseas.

A similar lack of information characterises this author's pronouncement with respect to the quality of the flowers



SUCCULENTS IN LADY HANBURY'S GARDEN AT LA MORTOLA, VENTIMIGLIA, ITALY.

exhibited at shows. The veriest amateur knows that, floristically, plants are of two sorts, those that appeal to the gardener pure and simple, and those that appeal to the fancying instinct which is so widespread among the inhabitants of these islands. Corresponding with this distinction are the ordinary garden flower and the show or exhibition bloom. The one appeals to the lover of the actual and beautiful, the other to him who seeks to learn the limits of the possible in evolution. Both kinds of flowers are to be encouraged, and the search of the one kind leads often to the discovery of the other. The leader-writer states that florists tend to produce violent and strange colours, and he praises the beautiful familiar colours of most of the older garden plants. Laudator temporis acti! The most striking feature of recent progress in horticulture is the prominence of beautiful shades and tints of colour among the newer varieties. Every plant-breeder knows how frequently unpleasing magenta shades occur among natural species, and every plant-breeder knows that from these garish magentas have come the loveliest and most delicate shades of pink and rose and salmon, carmine and pale blue. Another statement which must be traversed is that awards are frequently made by a committee of nurserymen. The Society, however, has not a committee of this character. That there are nurserymen amongst the members of each committee is true, but they do not constitute the committee, nor are they in the majority. Take, for instance, the Floral Committee, which has 44 members in the last published list. Of this number 18 are recognised traders, and 26 gardeners and amateurs. Finally, few among those whose work lies in the domain of plant-breeding will read without surprise the statement that in the improvement of garden plants "more is being done by amateurs than by professionals." Far be it from us to belittle the excellent work achieved by our amateurs, but this is an undeserved attack on horticultural traders, a class that compares very favourably with any other, both by reason of its public spirit and its devotion to the furtherance of horticultural research. Amateurs and professionals are alike doing good work in this direction; each might do more; but there is abundant evidence to prove that many of those engaged in commercial horticulture show praiseworthy enterprise both in the collection of new species of plants in distant lands, and in the indomitable and intelligent zeal which they bestow on the development of plants at home by cross-breeding and selection.

Supplementary Illustration.—The subject of the supplementary illustration is one of the rockeries in the garden of the late Sir Thomas Hanbury, at La Mortola. This rockery is planted with Mexican succulents; it was begun in October, 1897, the first plants being those in the foreground. Further specimens were added each year until the whole slope was planted. The tall specimens of Cereus in the middle of the group are C. Jamacaru, raised from seed. Most of the plants were grown either from seed or from small cuttings, but the large specimens of Echinocactus Grusonii in front form exceptions to this rule. To the left of the Echinocactus is Agave Engelmannii, and beyond this, again, Echinopsis valida, and a small plant of Cephalocereus senilis. The Opuntia behind Agave Engelmannii is O. Scheeri, and above it, a little to the left, O. arborescens. The large Opuntia to the right is O. robusta, and below it are three Agaves (Victoriæ-Reginæ), all grown from seeds. On the left, near the margin, is Cereus Celsianus, and below this Puya spathacea. In the background may be seen the large inflorescences of Agaves and Furcræas, while the middle of the group is occupied by a tall, pyramidal specimen of Furcræa Bedinghausii, covered with thousands of bulbs and plantlets. The straight, lofty inflorescence rising on the right-hand side is that of Agave Haynaldii, about 8 feet in height. The illustration only shows a part of the group, which is of considerable size and contains hundreds of interesting plants.

The Chelsea Show.—It is gratifying to learn that the Chelsea Exhibition was the most successful in the history of the Society. The receipts constituted a record: the sum of £2,150 was taken at the gates, and the total income, including charges for exhibits of sundries, amounted to £3,000. The largest sum ever taken at a Temple show was £1,400, in 1907. It is not expected that there will be much surplus after the expenses are paid, but it must be remembered that 25,500 tickets are issued free for the use of members and their friends. The greatest effect of these shows to the Society is the increase they cause in the membership. As the Hospital authorities have leased the ground to the Council for six more years, the sockets for the tent poles and the water system have been made permanent. The pensioners and hospital staff had free access to the exhibition at all times. The exhibition was open on the first two days until 8 p.m., but few of the public remained after 6 p.m. We are informed by the secretary that



Fig. 157.—Formal garden exhibited by Messrs. J. Carter and Co., at Chelsea, showing the handsome entrance gates.

the Council has made the following additional awards :—Silver-gilt Cup to Messrs. Wallace and Co., Colchester, for a group of herbaceous plants. Large Silver Cup to Mr. A. Dutton, Iver, for Carnations; and Messrs. John Peed and Son, West Norwood, for Caladiums and flowering plants. R.H.S. Standard Cup to Dr. John MacWatt, Duns, for Primulas; and Mrs. Litkie, Maidenhead (gr. Mr. Hulbert), for herbaceous Calceolarias.

Royal Horticultural Society.—At the fortnightly meeting of the Royal Horticultural Society, to be held at Vincent Square, Westminster, on Tuesday, June 3, Professor O. V. Muller, M.A., I.E.S., of Elphinstone College, Bombay, will give a short lecture on the Wild Flowers of Mahabaleshwar, India, illustrated by water-colour drawings by Mrs. O. V. Muller.

City of London Rose Society.—The first annual Exhibition of the City of London Rose Society is announced for Thursday, June 26, and is to be held in the Cannon Street Hotel. The newly-formed society seems likely to be a success, as it fulfils one of the first conditions—that of supplying a long-felt want. The culture of flowers in general, and of Roses in particular, has long been a cherished hobby of the City man, and many small private exhibitions of home-grown Roses have been held after office hours, in which the competition has been as keen and the interest as lively as in any exhibition of professional growers. Now the City man is to have a society of his own, and annual shows where the produce of his garden may receive the recognition it deserves. We congratulate the officers and committee on their enterprise, which we feel sure will meet with a ready appreciation.

Honour for Mr. R. A. Rolfe.—The French Académie Internationale de Géographie Botanique has awarded to Mr. R. A. Rolfe, A.L.S., editor of the *Orchid Review*, its Scientific Medal in recognition of his work among Orchids.

Forthcoming Sale of Orchids.—The collection of Orchids belonging to Sir William Bass is to be dispersed under the hammer by Messrs. Knight, Frank and Rutley, at Byrkley Lodge, near Burton-on-Trent, early in July.

Mr. George P. Berry.—On the eve of his departure from Scotland to take up his duties as General Inspector in Horticulture under the Board of Agriculture, a number of Mr. George P. Berry's horticultural friends in Edinburgh met him in the Royal British Hotel on the 23rd inst. in order to present him with an address giving expression to their appreciation of the work he has done to advance horticultural interests during the time he has occupied the post of Senior Lecturer in Horticulture in the Edinburgh and East of Scotland College of Agriculture. The chair was occupied by Mr. David King, President of the Scottish Horticultural Association, who presented the address, and amongst others present were Messrs. Alex. M'Callum, Director and Secretary of the Edinburgh and East of Scotland College, C. Comfort, Massie, Whytock, Fife, Scarlett, Todd, Phillips and Richardson.

Summer Horticultural Exhibition at Ghent.—A second Horticultural Exhibition at Ghent is being organised by the Cercle Horticole van Houtte, to take place in the Palace of Horticulture opened last month. This show is to be held in August next, from the 9th to the 18th. Orchids will be a leading feature of the exhibition, but there are many classes for other flowers, both for amateur and trade growers. Schedules can be obtained from the secretary, M. Francois Spae, Chaussée de Bruxelles, 16, Melle-lez-Gand, Belgium. Applications for space, with full particulars of each exhibit, must be in M. Spae's hands by July 25 at latest. There are nearly six hundred classes in all, comprising a large variety of plants. The King of the Belgians is offering a Gold Medal for the best miscellaneous collection of forty stove plants. One class, "To the memory of Louis van Houtte," will consist of plants obtained or placed in commerce by this well-known horticulturist. The Gold Medal of the Cercle is offered for the best new plant (imported or raised) from the point of view of local culture. There are numerous classes for Begonias, of all kinds and colours; Pelargoniums are also given a prominent place.

Vanilla Cultivation in St. Vincent.—What appears to be a successful attempt at the commercial cultivation of Vanilla in St. Vincent, is described in the *Agricultural News of the West Indies* (XII., No. 286). The Vanilla plant, Vanda planifolia, was introduced recently into St. Vincent from the Seychelles, and experiments have shown that it grows well even in districts with the high altitude of 1,500 feet and a yearly rainfall of 120 inches. The plants thrive best when they are planted on the stems of the tree fern, Cyathea arborea. The stems of the tree fern are cut into parts 7 or 8 feet in length, and in them holes are bored horizontally 1 foot apart and at right angles to one another. Pieces of cane fixed in the holes and projecting for about 8 inches provide additional support to the plants.

Plant Collecting in China.—Under the title of *The Land of the Blue Poppy*, the Cambridge University Press will shortly publish Mr. F. Kingdon Ward's record of his experiences and observations when he was engaged in plant-collecting in Western China and South-Eastern Tibet during the year 1911. The author has many interesting tales to tell of the Tibetan people, amongst whom he often played the part of medicine-man, receiving presents of milk and eggs as his fee. A number of maps at the end of the book show the exact districts—some of them not visited before by white men—covered by Mr. Ward in his travels, and the interest of the book is largely increased by the inclusion of forty photographs taken by the author. The book is dedicated to the memory of the author's father, Professor H. Marshall Ward.

Mr. John Heal—With reference to Mr. Heal's accident on the 18th inst., when he was unfortunately knocked down in Putney High Street by a runaway horse and cart, we have received reassuring reports. Unfortunately one of his ribs was fractured, but he is suffering principally from severe shock, and entire rest and quiet being at present absolutely essential, his medical man has forbidden his seeing anyone. We learn that many enquiries have been made by Mr. Heal's numerous friends, showing how much he is esteemed.

"The Nation's Library."—A notable addition to the series of popular manuals is the "Nation's Library," published by Messrs. Collins. The object of the manuals is to provide expert information on subjects of present interest. Among the first six volumes of the series are Mr. James Long's *The Practical Side of Small Holdings*, and *Modern Views on Education*, by Mr. Thiselton Mark. The books are well printed and are sold at the low price of 1s. per volume.

Trinidad Botanic Garden.—A strong protest is made in the *Port of Spain Gazette* (April 25), on the present state of the Trinidad Botanic Garden. It is pointed out that for many years after its establishment in 1820 this garden was famous for its beauty and usefulness, but that it has been allowed to suffer from neglect and mismanagement. The gardens are at present under the control of the Department of Agriculture, and it is to be hoped that if their condition is as deplorable as is asserted by our contemporary an enquiry into the cause of that condition will be instituted without delay. The tendency nowadays is to put the great tropical gardens under the management of agriculturists; the idea being that they should serve as experiment stations. It must, however, be apparent to everyone who has had experience in such matters that the two purposes of experimentation and of ideal cultivation are not compatible with one another. If the present state of the Trinidad Garden be due to an attempt to combine these two objects, the sooner the attempt is abandoned the better.

The Reproduction of Musanga Smithii.—Mr. T. F. Chipp gives the following interesting particulars of the reproduction of Musanga Smithii in a recent issue of the *Kew Bulletin*:

"One of the most striking features of tree life on the West Coast of Africa is the rapidity with which abandoned clearings are covered by the Umbrella tree or Corkwood (Musanga Smithii, P. Beauv.). This is commented on by all travellers, and it is brought to one's notice more especially by the long stretches of hillside covered with this tree which are to be found along the railway, round mining centres, and, in fact, wherever any land which has been stripped of its original forest covering is left to itself for a few months. The general appearance of these pure stands of Umbrella tree is that of a young open wood, the trees being all of an even height of about 30 feet. Although there may be many acres of such forest, one never sees amongst them any flowers or signs of flowering trees. For these it is necessary to go into the original uncut 'bush,' and there occasionally an old tree may be found, much larger than the trees in the open, generally solitary or with a very few of its own kind, and, if it is flowering, in the majority of cases it is found to bear male flowers only. This fact suggested that a closer examination of the pure stretches of forest composed of this tree should be made, with a view to ascertain the method by which its area is so effectively and so rapidly extended. The stands examined were those at Amokokrom, and Boundary Post in the Western Province of the Gold Coast Colony. It was noticed that the trees towards the outside and exposed parts of the forest put forth adventitious roots from all parts of the stem up to a height of about 10 feet from the ground. Sometimes these roots came away from the stem at a right angle and, after growing out horizontally for about a foot, inclined slightly downwards until they reached the soil. On reaching the soil a shoot was sent up from the end of the root, and a new tree was thus formed at some little distance from its parent. In other cases the adventitious roots inclined downwards at once from their point of origin, in this case striking the soil in the immediate vicinity of the parent tree. Often the roots were noticed to have been broken in mid-air, when in some cases they simply forked, the two rootlets continuing downwards to the soil and forming two new trees, or in other cases, a shoot was sent up and a root down from the point of injury, thus starting a new tree in mid-air. There seems little doubt, therefore, that these pure stands are extended effectually by vegetative reproduction, at least within the zone of the moist Evergreen Forest, and in consequence the formation of flowers and fruit has fallen into desuetude."

The "Botanical Magazine."—The issue for May contains illustrations and descriptions of the following plants :—

Rhododendron wightii. tab. 8,492.—This species has very handsome trusses of large, pale-yellow flowers. It is very rare in collections, although it has been in cultivation in this country for many years. The late Sir Joseph Hooker found it growing abundantly in woody valleys in the Himalayas, and on the spurs of all the mountains at an elevation of 12,000 to 14,000 feet. The plant which furnished the material from which the *Botanical Magazine* plate was prepared was presented to Kew by Miss Mangels, in whose garden at Littleworth there is a large specimen. But the plant only flowers in certain seasons, and that is probably the reason why it is so rarely met with in gardens.

Deutzia longifolia. tab. 8,493.—This species was illustrated and described in *Gard. Chron.*, June 22, 1912, fig. 195. Plants were collected by Mr. E. H. Wilson in China on behalf

of Messrs. James Veitch and Sons, and in 1905 the species was sent out by this firm under the name of D. Veitchii, but Franchet had previously described the plant as D. longifolia. The material from which the *Botanical Magazine* plate was prepared was obtained from a tree in Kew Gardens, raised from seeds sent by Professor Sargent, of the Arnold Arboretum. Miss Smith's drawing shows a much laxer inflorescence than in our illustration and the leaves appear to be narrower. The petals are pleasingly tinted with rose, the species being one of the most ornamental of all Chinese Deutzias.

STRONGYLODON PSEUDOLUCIDUS. TAB. 8,494.—The Strongylodons are Leguminous plants, and the species under notice has rosy standards and reddish keels. S. pseudolucidus is found in Ceylon, Madagascar and other parts, and seeds were sent to Messrs. Charlesworth and Co. by a correspondent in Madagascar. The plant was found to be the same as S. ruber, which is, however, a synonym of S. lucidus, hence it was given a new name. Messrs. Charlesworth state that the plants grow well in a warm conservatory.

DENDROBIUM SCHUETZEI. TAB. 8,495.—This handsome, white-flowered Dendrobium was illustrated and described in *Gard. Chron.*, September 21, 1912, fig. 102. The species was introduced by Messrs. Sander and Sons from the Philippines, and it flowered in their nursery for the first time in September, 1912.

SAXIFRAGA STRIBRNYI. TAB. 8,496.—A description of this red-flowered Saxifrage from the pen of Mr. W. Irving was published in *Gard. Chron.*, April 24, 1909, p. 259, and an illustration of the plant was given in our pages for September 18, 1909, fig. 81. The plant is nearly allied to S. media, but it has a more-branched inflorescence and nodding flowers.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

DAVIDIA INVOLUCRATA.—My plant of Davidia involucrata here had 21 blooms on it. This is the first time it has flowered. The effect from a distance is not very much, but from what one can see of one bough, where five flowers are grouped closely together, I think we may eventually get the splendid appearance of which Mr. Augustine Henry has told us. *J. A. Christie.*

THINNING OF PEACHES AND NECTARINES OUT-OF-DOORS.—As soon as the fruits of Peaches and Nectarines are the size of Peas their thinning should be begun. The work should be done with care and discrimination, the hand being guided by experience and by the knowledge of the respective sizes of the fruits each variety produces. The condition and size of each tree must also be considered: how many fruits it will carry without impairing its vigour. The thinning of the fruit is usually contemporaneous with the last stage of disbudding; it should be spread over at least a week. When the work is finished the fruits should be from 9 to 12 inches apart each way, retaining the most evenly-sized and best-placed specimens on the upper surface of the tree. Many growers defer the final thinning until the stoning process is complete in case some of the fruits drop during this period. This, however, is a mistake, as dropping is usually brought about by overcropping and may be almost entirely prevented by thinning. The soil about the roots should be kept uniformly moist, and the foliage clean and healthy. If the trees are inclined to be weak the number of fruits should be still further reduced—not allowing them to remain closer than 12 or 15 inches each way. Light crops will enable even weakly trees to develop a few good fruits, and at the same time to make stronger wood for the next season. When thinning Nectarine crops it should be remembered that the individual fruits are smaller than those of the Peach. The fruits can therefore be left a little closer together—say 6 to 9 inches apart. Heavy mulching of the borders with well-decayed manure and copious waterings (sometimes with liquid manure) when the fruit is swelling are beneficial; and the same treatment may be applied with success—at the proper time—to fruits grown under glass. *H. W. Ward.*

BRANCHING TULIPS.—A year ago Mr. A. D. Hall gave to the writer a curious Tulip, the flowers of which are characterised by the possession of internal "spurs." The character has manifested itself this year, but what is interesting is that the plants are showing abnormalities in quite other directions; for example, one of them is producing an aerial bulb towards the base of one of its green leaves, and another is bearing a branched inflorescence, evidently due to fasciation. It looks as though the plant was suffering from a general disturbance of growth, and that this disturbance was manifesting itself by a whole series of quite distinct symptoms. *K.*

ANOPLANTHUS COCCINEUS.—In March, 1910, I received from the Botanical Gardens, Tiflis, seeds of Centaurea dealbata and of Anoplanthus coccineus. According to directions I planted them together. The Centaurea dealbata germinated, but nothing else that I could see, and after keeping the Centaureas in a pot for a season or two I planted them out in the nursery and thought no more about them. To-night, walk



THE CHELSEA SHOW.

FIG. 158.—GROUP OF FLOWERING PLANTS EXHIBITED BY MESSRS. E. WEBB AND SONS.

ing round, I had my attention drawn to the Centaurea and then caught sight of a patch of red growing under the leaves and found a scape 6 inches high. It looks like a Lathiæa, and is no doubt the Anoplanthus. *A. C. B.*

Undeveloped Land Duty.—The Land Union is making an enquiry into the manner in which nurserymen are being assessed to Undeveloped Land Duty, and would be glad to receive information, in confidence, from members of the trade. Communications should be addressed to C. Crofton Black, Esq., Land Union, St. Stephen's House, Westminster, London. *H. M. V.*

Carnation Lady Ingestre.— Owing to an error the seedling Carnation, for which we received an Award of Merit at the meeting of the R.H.S. on the 14th inst., was named Lady Shrewsbury, instead of Lady Ingestre. We are writing to the Royal Horticultural Society asking for the record to be amended. *Wm. Cutbush and Son.*

RHODODENDRON EXHIBITION AT WESTMINSTER.

The Hall of the Royal Horticultural Society at Westminster has been occupied this week by the Exhibition of Rhododendrons held annually by Messrs. John Waterer and Sons. The display was one of the largest ever made by a single firm; no fewer than two housand plants of Rhododendron—many of them very large specimens—were shown, besides Conifers, Maples and other foliage plants. The ornamental Evergreens were used chiefly as a background, to relieve the monotony of the walls, and the flowers were diversified by specimen Japanese Maples. In the centre of the hall were two large beds, with irregular borders. Against the back wall, opposite the entrance, and extending as far as the wall at either end, was a wide border filled with Rhododendrons of various kinds, including "Mollis" and Ghent hybrids. The most prominent feature of this large display was a central bay, furnished in the foreground with the new variety Alice, resembling Pink Pearl, but surpassing it in that it has a more compact truss and the colour is a warmer pink. Sweeping down from either side masses of the rosy-pink Cynthia appeared, terminating on one side with the variety Prometheus, and on the other with Michael Waterer. Magnificent standard plants of Pink Pearl served as foils in the central mass, with here and there plants of Acer japonica, those with golden foliage being especially pleasing. The broad bank of colour gave way on either side to the green hue of foliage plants, with copper-coloured Maples at intervals, the whole being finished off with a batch of Azalea J. C. van Tol, the warm terra-cotta blooms entirely covering the stems. Probably the best effect, however, was produced by a group of mauve-coloured Rhododendrons, interspersed with specially fine plants of Maples of the green and purple Acer dissectum type. Amongst the Rhododendrons in this group none was more beautiful than R. fastuosum flore pleno, the semi-double flowers having very long stems. The central beds were each crowned with magnificent specimens of the soft-pink Mrs. E. C. Stirling variety, and grouped at the foot of these was a selection of the best kinds of Rhododendrons in cultivation. Each group contained large masses of the beautiful Pink Pearl, of which there were 150 plants in all. Others which were specially noticeable included Marchioness of Tweeddale, a rose-pink variety with a salmon blotch; Gomer Waterer, a well-known variety, with flowers of a faint blush-rose; Doncaster, one of the best red varieties, but a rather indifferent grower; Brilliant, which is superior to Doncaster in growth, the shade being the nearest approach to scarlet which has yet been obtained in these flowers; Seedling 476, a fine rosy-red flower, the stamens of which have white filaments, which give a striking effect, characteristic of the variety; Marquis of Waterford with tall, conical trusses of handsome pink blossom; Francis B. Hayes, a handsome variety, with flowers bearing a rich chocolate blotch on a white ground, which makes them conspicuous from a considerable distance. The variety George Hardy is very delicate-looking, being almost white. The blooms of Lady Eleanor Cathcart are bright, clear rose with crimson spots, and the variety should be in every collection. One of the finest of the numerous Ghent hybrids displayed was an R. aureo-grandiflora. It bears blossoms of a rich gold, suffused with a delicate tinge of apricot. In one corner was arranged a mass of Viburnum plicatum.

Both the annexes were utilised for purposes of display; in one was a collection of paintings of Rhododendron subjects, and in the other plans and illustrations of gardens designed by the firm. The only other exhibitors were the Wargrave Hardy Plant Farm, Ltd., who showed two excellent Rock Gardens and a selection of hardy flowers.

SCOTLAND.

Presentation to a Gardener.

Mr. W. M'Millan, who has retired from service at Drumlanrig Gardens after fifty-three years of regular employment there, has been presented by his fellow-employees with a marble timepiece. Mrs. M'Millan also received a gift.

Municipal Grants to Horticultural Societies.

At a recent meeting of the Finance Committee of the Aberdeen Town Council it was agreed to recommend a grant of £10 10s. to the Aberdeen Chrysanthemum Society, this being for two years, and the sum of £10 to the Royal Horticultural Society of Aberdeen.

The Salary of the Superintendent of Glasgow Parks.

The revision of the salaries of the Glasgow Corporation officials in consequence of the extension of the city has been under consideration, and among the most recent proposals is the recommendation of the committee that the salary of the superintendent of the parks be raised from £550 to £600 per annum. The work of the parks department has been greatly increased by the extension, which has added a number of parks to the city.

Seed-testing Station.

The Board of Agriculture for Scotland having given the movement for the establishment of a Scottish seed-testing station its support it is anticipated that the station will be opened in autumn. The appointment of a director will be announced shortly.

Decorations at Holyrood Palace.

The firm of Messrs. Thomas Methven and Sons, Edinburgh, decorated the Palace of Holyrood for the residence of the Lord High Commissioner to the General Assembly of the Church of Scotland, as they have done on former occasions. The gardens at Holyrood are looking remarkably fine this season.

The Late Mr. Robert Rogerson.

Mr. Robert Rogerson, seed merchant, Whitesands and Marchmount, Dumfries, who died on March 7, left, in addition to real estate, personal estate in the United Kingdom valued at £30,493, of which £21,077 represents the value for probate of his interest in his business.

Forestry Demonstration in Aberdeenshire.

It is understood that Ballogie Estate, in the Deeside district of Aberdeenshire, is to be chosen as the area on which the Forestry Demonstration of the Advisory Committee on Forestry is to be held. There are over 4,000 acres of woodland on the estate, containing trees of all ages and of many and various kinds, including a particularly heavy crop of Scots Fir.

SOCIETIES.

ROYAL HORTICULTURAL.

Sundries at Chelsea.

May 20, 21, 22.—In continuance of our notice of the R.H.S. Show at Chelsea Hospital, we now give the following report of the exhibits of horticultural sundries, which are staged nowadays in a much more attractive manner than formerly.

It is satisfactory to note that the firms which deal in such things as garden seats, vases, or pergola timber, for example, no longer consider it to be sufficient to fill the space allotted to them with their specialities set out in rows as though in a warehouse. The garden vases are now filled with flowering plants, and are attractively set out; the garden seats form part of a "garden beautiful" scheme which often takes the form of a necessarily small, paved garden with an inviting summer-house in the background. Pergolas are shown complete, often of considerable size, and occasionally in triplicate, radiating from an ornate garden house and lightly clothed with rambler Roses in full bloom. In the case of the extensive pergolas exhibited by Messrs. J. P. White & Sons, Bedford, even the long cross-bars were furnished, a little too primly perhaps, with Dorothy Perkins Roses. These plants had apparently been forced in unusually small pots, which were cunningly hidden at the juncture of the uprights and the cross-timbers. Just opposite the pergolas Messrs. T. Crowther & Sons, Fulham, displayed in conjunction with Messrs. Piper's extensive collection of admirable topiary an ornate pair of hammered iron garden gates which would be worthy to adorn any garden; old stone well heads, complete with iron-work and pulley, beautiful leaden figures, and many vases. Small formal gardens, sometimes stone paved, with central sundials and cool-looking summer-houses, were laid out by Messrs. J. Cheal & Sons, Crawley; the En-Tout-Cas Co., Leicester; Messrs. Pulham & Son, London; and Messrs. Wood & Sons, of Wood Green, London.

Various articles of garden furniture, seats, including those of the more companionable tête-à tête pattern, were shown by the Dryad Works Co., Leicester; Castles' Shipbreaking Co., Millbank; Messrs. Gamage, Ltd., Holborn; Messrs. Liberty & Co., London; Messrs. Thos. Syer & Co., London; Messrs. Vipan & Headley, Leicester; Messrs. Headley & Edwards, Cambridge; Messrs. Hughes, Blocklow & Co., Blyth; The London Provincial & Export Co., Wandsworth; The Economic Fencing Co., London; and Messrs. Maggs & Co., Bristol, who also erected small garden tents. Many kinds of Teak-wood and other tubs, several of them containing Palms, Aspidistras, Hydrangeas, and other plants were shown by Messrs. D. Roberts & Co., Tottenham. Messrs. Wm. Duncan, Tucker & Sons, 27, Cannon Street, London, erected several span-roof glass-houses with attendant frames. They were of graceful outline, and so designed as to admit a maximum of light and, when required, abundant ventilation. The roofs were fitted with excellent lath blinds, and an attendant demonstrated their smoothness of working, drawing special attention to the separate portion over the top ventilator, which permits of the latter being raised to its fullest capacity. Greenhouses were also erected by Messrs. Pearce & Co., London, and by Messrs. Skinner, Board & Co., Bristol, who specialised their wire-tension structure; whilst The Folding Span-Light Co., Slough, and The Three C's Co., Millwall, exhibited clôches and hand-lights.

In the large tent Messrs. J. Weeks & Co., Victoria Street, London, explained by means of dainty models, with ventilating gear in perfect working order, the advantages of their system of building glass-houses and their well-known greenhouse boilers. The samples of woods employed by Messrs. Weeks in glass-house building were also shown, and included the well-known Teak-wood and Siberian Larch, a close-grained, hard-surfaced wood, which should last long under the trying alternations of wet and dryness which obtain inside hothouses.

Spraying Appliances, &c.

The spraying demonstrations—although the mist-like vapour changed by a turn of the

operator's wrist to a driving rain is only directed against sheets of glass or canvas, and quickly runs down into the supply tank—always fascinate visitors to flower shows, and the displays at Chelsea, which included the latest patterns and improvements, were of great interest to gardeners. Messrs. H. Hartjen and Co. had on show various patterns of the "Holder" sprayers. The Shoulder Sprayer, which is slung by a strap over the shoulder, is a fine development of the knapsack sprayers, and is especially suitable for use by ladies. For work in the greenhouse the hand sprayers are very speedy, economical, and handy in use. The sulphurator is a useful contrivance for evenly distributing flowers of sulphur and other powders over the foliage of plants and trees. The Four Oaks Co., Sutton Coldfield; Messrs. Benton and Stone, Birmingham; The United Brassfounders and Engineers Co., Manchester; and Messrs. E. A. White, Ltd., Paddock Wood, also showed sprayers and similar implements. The Sanitas Co., Limehouse, displayed various insecticides, distempers, etc., whilst Messrs. Robinson Bros. included fertilisers in their exhibit of insecticides. Messrs. W. Voss and Co. demonstrated with boxes of treated and untreated seedling plants the value of soil sterilisation by the use of creole. The Jeyes' Sanitary compound was arranged in attractive array with the useful sprayers and well-known insecticides made by the Jeyes Co. The "Izal" disinfectants and germicides were exhibited by Messrs. Newton, Chambers and Co., London. The Acme Chemical Co., Tonbridge, exhibited weed-killers and lawn sand; as also did The Boundary Chemical Co., Liverpool, who included spraying syringes. Messrs. Cooper and Nephews showed on their stand of insecticides and spraying pumps a handy-sized brush, fitted with stiff wire bristles, which is eminently suited for scouring mosses and lichens from the trunks and branches of trees. Messrs. Corry and Co., Covent Garden, London, made a speciality of tobacco preparations; whilst Messrs. Cooper, Pegler and Co. made a large display of their Vermorite fungicide; and Messrs. G. and W. Purser, London, showed garden hose and sprinklers.

Messrs. Chas. P. Kinnell and Co., 65, Southwark Street, London, had their Climax pump busily lifting 12,800 gallons of water every hour; the engine was petrol-driven, and worked very quietly and smoothly. In the same exhibit there was the giant Rochford tubular boiler, which is recommended for heating very large areas of glass-houses, alongside the Anglian sectional pattern, which is suitable for the amateur's smaller greenhouses. Messrs. Fenlon and Son, London, displayed the "New Hot-Water" Boilers; and Messrs. Hontsch and Co., Guildford, exhibited well-made 1912 patterns of their boilers.

The exhibits of lawn-mowers by Messrs. T. Green and Sons, New Surrey Works, London, and by Messrs. A. Shanks and Son, Bush Lane, London, occupied prominent positions in the large tent, and included the newest and best patterns of various sizes. In the grounds Messrs. Barford and Perkins, Peterborough and Messrs. Ransomes, Sims and Jefferies, Ipswich, who had a large exhibit, also showed various lawn-mowers. Horse boots and garden tools were shown by Messrs. H. Pattisson and Co., of Streatham. Mr. G. Dunford, Ilford, showed lawn brooms, and Mr. A. C. Harris, Leicester, displayed "Standalone" foot-scrapers. Messrs. Barr and Sons, Covent Garden, London, included their bulb planter, and prepared plant food in an interesting exhibit of garden tools and cutlery. Messrs. Wood and Sons, Wood Green, London, filled a large marquee with an almost bewildering variety of garden sundries, such as chemical manures, insecticides, tying materials and watering appliances.

The Hardy Patent Pick Co., Sheffield, exhibited high-class digging and other tools.

Messrs. Sutton and Sons, Reading, erected two handsome kiosks in the pollarded Lime Avenue and fitted them with exceedingly attractive exhibits. The principal feature of the first kiosk consisted of illustrations of Messrs. Sutton's method of raising turf from seed, where they displayed dense, fresh green examples of turf in various stages of growth. In glass cases injurious insects and their depredations, in natural colours, formed an instructive object lesson, and no less valuable were the glass jars containing fungous and other pests. The second kiosk contained a large assortment of garden tools: lawn mowers, spades and forks, high-class cutlery, and such golf-course appliances as the "Lawn Grass Sprinkler," an ingenious device on wheels for evenly distributing powder manures and lawn sand.

Inside the large tent Messrs. J. Carter and Co., Raynes Park, exhibited no fewer than eighty samples of soil in glass globes, taken from golf courses all over the world. Here were to be seen fine yellow sandy soil from Stanton Heights, Pennsylvania, U.S.A.; the red-brown soil from Shilling, Assam, was alongside the rich red soil from Devon, and near by was the brown peaty soil from The Hague, Holland. Canada, Italy, and all parts of the British Islands contributed their quota to this very interesting collection. Of even greater interest to the general visitor were the many microscopes, under which could be seen microscopical specimens of plant diseases, and the seeds of grasses and weeds.

Messrs. Joseph Bentley, Ltd., Barrow-on-Humber, contributed samples of such indispensable horticultural chemical specialities as weed destroyers, spraying fluids, and fertilisers, their exhibit being amongst the most valuable in the section under notice.

Mr. A. Key, Norwich, contributed fertilisers for lawns.

Messrs. Wakeley Bros., Bankside, London, exhibited samples of their hop manure and various plants which have benefited by its use.

The well-known Gishurst compound was shown by Mr. F. Hickson, Upper Norwood, who also displayed Beetlecute, a composition which, as its name implies, destroys beetles, and coconut fibre.

Ladders and portable steps formed an attractive feature of the exhibits in the Lime Avenue. The Acme Patent Ladder Co., Earlsfield, had a great variety of ladders, but specialised a safety extension ladder fitted on wheels, which would be very useful when pruning lofty hedges or when gathering fruit from standard trees. Messrs. Drew, Clark and Co., Leyton, demonstrated the handiness of their "Diamond" extension ladders, and Messrs. Heathman and Co., Parson's Green, exhibited ladders, hose, and fire appliances.

Other exhibitors were Messrs. Major and Co., Hull (Solignum wood-preserving stain), The Vectis Stone Slate Works, Hereford (paving and roofing stone), Messrs. Abbott Bros., Southall (table-trays, etc.), Messrs. Blake and Mackenzie, Liverpool (flower pots, seed testers, etc.), The French Cloche Co., Westminster (French garden sundries), Messrs. Green and Nephew, London (flower glasses), Mr. V. T. Hill, Bristol (patent slug traps), Messrs. Osmond and Matthews, London (flower holders), Miss Mitchell, Godalming (baskets), Mr. J. Pinches, Camberwell (garden labels, etc.), The Potters' Art Guild, Guildford (pottery), Mr. J. Pither, Uxbridge (Mushroom spawn and growing Mushrooms), Robert Sydenham, Ltd., Birmingham (rustic table decorations), Messrs. F. Walters and Co., Rugby (steel garden stakes), and The Patent Safety Ladder Co. (extension ladders).

South African produce—fruits, tobacco, etc.—was shown by Mr. Chiappini and Messrs. Westmacott from their London warehouses; and jams and preserves were exhibited by Miss Edith Bradley, Hollingbourne, The Elsenham Jam Co., Essex, and by Mrs. Miller, Marlow.

Paintings of garden genre were exhibited by Miss Edith Adie, 9, Brechin Place, London; Miss Edith Fisher, East Molesey; and Mr. R. Hughes, Potters Bar. Messrs. R. Wallace and Co., Colchester, showed garden designs.

HORTICULTURAL CLUB.

Lecture on Gilbert White.

May 13.—The monthly house dinner of the Horticultural Club took place at the Hotel Windsor on the 13th inst., when Mr. Wilfred Mark Webb, F.L.S. (honorary secretary of the Selborne Society) delivered a lecture entitled "Gilbert White as Gardener and Naturalist." Mr. Webb illustrated his lecture with numerous lantern slides, representing rare manuscripts and other relics of White, connected with his natural history observations at Selborne. A reputed portrait of White was also shown, but Mr. Webb would not express any opinion as to its authenticity.

In the course of his remarks, the lecturer showed that White was as much a gardener as a naturalist. The first diary he wrote was essentially that of a gardener—he recorded such facts as the sowing of his Broad Beans, the staking of his Sweet Peas, the cutting of his first Cantaloupe Melons. After keeping this gardener's diary for some considerable time, he took up the study of botany and gave a new title (Calendar of Flora and the Garden) to it, but did not change its character at all. In the following year he kept a separate Nature diary which was of a more general character. Mr. Webb explained the reasons which prevented White from publishing this diary, and showed the company a copy of the small volume which proved an obstacle to his intention. He further stated that the manuscript of the diary has now been printed, not in type, but in facsimile handwriting. A limited number of copies appeared at 25s., and a few of these are still in Mr. Webb's possession. The book which White published, namely, *The Natural History of Selborne*, is a collection of the letters White wrote to two correspondents—Pennant and Daines Barrington. Mr. Webb showed the company a long letter, written by Philip Miller (the author of *Miller's Gardeners' Dictionary*) to White, on the culture of Melons and other subjects, and, notwithstanding the considerable number of years which have elapsed since the letter was written (in 1759), the handwriting was as legible as if just penned.

The lecture was uniformly interesting, and all present felt that their acquaintance with the great naturalist had been considerably increased, although most of the company were already familiar with his published work.

In the course of the discussion Mr. Poole said that the portrait shown by Mr. Webb did not appear to him to represent Gilbert White as a man who possessed an unusual fund of humour, as one would expect to find him. Mr. W. B. Cranfield gave an account of some of his own observations on birds in his garden at Enfield Chase—a district only a few miles from the metropolis, but apparently as rich in wild life as many remote localities. Mr. R. Hooper Pearson pointed out that Gilbert White, whose name is a household word wherever English is spoken, and whose fame is that of a naturalist and botanist, was nevertheless a gardener first and foremost. His diary showed that he had all the instincts of a gardener—it related the merest details in the culture of Cantaloupe Melons and even of outdoor vegetable crops, with all the respect which a true gardener knows such things merit, though they may appear to others unimportant and tedious. It was only after a thorough acquaintance with plants as a cultivator that White experienced a desire to know something about them as individuals. This was a perfectly natural progression, and it taught a useful moral even at this day, for horticultural students who intend to become cultivators were most successful when they learned the practical work first, and were led from this to acquire theoretical knowledge. When the theory was studied first it often seemed impossible to develop afterwards the instincts and characteristics of the cultivator.

KEW GUILD.

[Annual Meeting and Dinner.]

The annual general meeting of the Kew Guild took place on Wednesday, the 21st inst., at the Holborn Restaurant. Mr. A. W. Hill, M.A., presided, and there was a large attendance of members. The chief business before the meeting was the consideration of the new rules, and these were adopted with slight alterations.

The business meeting was followed by the annual dinner, the chairman being Mr. W. Goldring, the Guild President for the year. On his right hand were Mr. A. W. Hill, M.A., Assistant Director (Vice-President), and Mr.

A. R. Brown; and on his left, Messrs. R. Irwin Lynch, H. F. Macmillan, R. Hooper Pearson, S. A. Skan, W. J. Bean, and others. Altogether there were 91 present. After the toast of "The King" had been duly honoured, Mr. Goldring proposed the principal toast of the evening, namely, "The Kew Guild." He reminded the members that the Guild was established twenty years ago, and that it owed its inception to the fertile brain of the Curator, Mr. W. Watson. Its object was to bind in a common tie of brotherhood all those who at any time were employed in the Royal Gardens, Kew. The Guild had flourished from the beginning, increasing in strength from year to year, until at the present time it embraced 1,000 members. He referred to the dinners and annual meetings—occasions when the members were brought into social contact with one another—and other advantages arising out of membership of the Guild, but especially to the bond of union provided by the *Journal*. This publication—which, for his own part, he was accustomed eagerly to anticipate, and to read from cover to cover—circulated not only among Kew men resident in this country, but also among those who had taken up something of the burden of Empire, and were holding responsible posts in the Colonies and dependencies of the British Empire—positions charged not only with the usual responsibilities of administration, but also with the risks and dangers to life and health common in half-civilised countries and unfavourable climates. Kew had already contributed her quota of martyrs to the cause of Empire development. Some of the men scattered over the earth's surface contributed letters to the *Journal*, giving particulars of the difficulties and problems they had to face, and the pleasure they derived from the successful accomplishment of their work. Such letters were not only of extraordinary interest, but were also sources of valuable information. He wished the Guild continued success, and hoped that Kew men would always maintain the prestige they now enjoyed in every part of the world. He associated with the toast the names of Mr. E. Brown, of Uganda, and Mr. Hugh F. Macmillan, Ceylon.

In response, Mr. Brown said that Uganda had progressed more rapidly than any of the older tropical colonies. He deplored the fact that in many Government stations abroad preference had been given to young, untrained men from the Universities, and said that this fact had been prejudicial to the public service. In some cases Kew men had retired from Government positions, and had utilised their knowledge in their own interests in the same colonies. Almost always where this had happened, the results showed how valuable the knowledge of the practical man could be. In these and kindred matters, the Kew Guild *Journal* could do good by pointing out the unwisdom of Government departments in pursuing such a policy. The Guild held annual meetings, and it published the *Journal*; but these things need not exhaust its activities; there was still work to be done on the lines he suggested, which the Guild could undertake without any loss of dignity.

Mr. H. F. Macmillan also responded, and gave several instances in which Kew men had left the Government service in Ceylon and taken foremost positions amongst successful planters.

The toast of "The President" was proposed by Mr. Charles H. Curtis, Vice-Chairman, in felicitous terms; and Mr. Goldring, in reply, took the opportunity to speak of Kew in terms which expressed his intense admiration for the gardens and all connected with them. He said that if any of the younger men should desire to become landscape gardeners, they need not go beyond the confines of Kew to obtain inspiration. Everything was expansive—nothing was mean; in fact, it was impossible to "think small" at Kew. There were landscapes of the highest interest and beauty; there were formal and informal types of gardens; there were vast expanses of lawn; there was endless variety of tree and shrub; there were greenhouse and hothouse plants; there were clipped yews by the palm-house and the entrancing beauty of the wild garden.

NATIONAL TULIP.

May 21 and 22.—It must be regretfully recorded that the annual Exhibition of Florists' Tulips, which was held on the second and third days of the R.H.S. show at Chelsea, was not a success. The Tulip, despite its great beauty and its popularity as a garden flower, evidently does not find favour with exhibitors, for there were no exhibits in the classes arranged by the R.H.S. at the meeting held on the previous Wednesday at Vincent Square, and on the occasion now under notice there were practically only two exhibitors in each of the two sections into which the classes are divided.

Open Classes.—In the six open classes for collections of florists' Tulips, Mr. C. W. Needham, Hale, Cheshire, won all the first prizes, and Mr. W. Dunn, Cambridge, was in each instance awarded the second prize. Of the 12 Rectified Tulips, 2 feathered and 2 flamed of each class of Tulip, shown by Mr. Needham, the blooms of the following varieties were meritorious: George Haywood (feathered bizarre), George Edward Schofield (feathered byblœmen), Alcestris (feathered rose) and Mabel and Annie McGregor (flamed roses). In Mr. Dunn's second prize collection the variety George Edward (flamed byblœmen) was an especially fine bloom. In the class for 6 Rectified Tulips Mr. Needham showed very good blooms of the varieties Annie McGregor and Sir Joseph Paxton: his best bloom in the class for 3 feathered Tulips was George Haywood (bizarre), whilst in the class for 3 flamed varieties Mabel and Sir Joseph Paxton were especially meritorious.

The exhibit of 6 Breeder Tulips shown by Mr. Needham was very charming, five of them (Alfred Lloyd, Annie McGregor, Hall's Seedling, Rose Hill and Goldfinder) being worthy of mention; in this class Mr. Dunn showed an excellent bloom of Goldfinder. The varieties Mabel and Talisman shown by Mr. Needham in the class for 3 Breeder Tulips were conspicuously good.

Single Blooms.

In the two classes (G and H) provided for single blooms of each of the different types of Tulips, Mr. W. Dunn won the first prizes for Bizarres with Samuel Barlow (flamed) and Sir J. Mackintosh (feathered); the first prizes for the remaining types were won by Mr. Needham, who showed Chancellor (flamed byblœmen), George Edward (feathered byblœmen), Annie McGregor (flamed rose), Mrs. Collier (feathered rose), Alfred Lloyd (bizarre breeder), Mabel (rose breeder) and Ravenshoe (byblœmen breeder).

The "Samuel Barlow" prize offered for the best pair of Rectified Tulips was won by Mr. Needham with Samuel Barlow (flamed byblœmen) and Stockport (feathered byblœmen); second, Mr. W. Dunn.

In the classes for growers of fewer than 400 bulbs of English Tulips the prizes were won by Miss Hardcastle, Harpenden, and Mr. H. Bartleet, Shooters Hill, in the order named. The last-named exhibitor won the first prizes in the class for 18 Darwin Tulips and 18 Garden Tulips respectively.

Messrs. Barr and Son, Covent Garden, the only exhibitors, were awarded the first prize of a gold medal in the class for a trade exhibit of Darwin, Cottage and English Tulips.

Premier Blooms.

The prizes offered for the best blooms in the show were won by Mr. Needham for Stockport (feathered) and Goldfinder (breeder), and Mr. Dunn for Samuel Barlow (flamed).

ROYAL METEOROLOGICAL.

May 21.—The first afternoon meeting of the present session was held at the Society's rooms, 70, Victoria Street, Westminster, on the 21st inst., Mr. C. J. P. Cave, President, in the chair.

Mr. E. Gold read a paper on "The Determination of the Radiation of the Air from Meteorological Observations," in which the theory of the cooling of the air during the night hours was developed and applied to observations made near the earth's surface and 130 feet above it, in order to obtain an estimate of the radiating power of the atmosphere. The results obtained show that even on calm, clear nights, when the air at the higher level is warmer than that near the surface, the cooling of the air is affected by convection, and the observations available do not suffice for the determination of the correction to the value of the radiating power necessary on this account.

Mr. S. C. Russell read a paper on "Results of Monthly and Hourly Cloud-form Frequencies at Epsom, 1903-1910." He had been able to make hourly records of the varieties of cloud observed each day through the eight years, and these he has grouped under 15 forms of cloud. The total number of individual records approximate to 100,000. The cumulus cloud yielded the greatest number of daily values (1,622), the stratus coming next (1,155). The upper clouds, which include the cirrus, cirro-stratus, and cirro-macula, show a marked prevalence during the summer with minima during the winter. Morning and evening maxima with a midday decline are common to all these varieties. The intermediate clouds, which include cirro-cumulus, alto-stratus, alto-cumulus and cumulo-stratus, are also more prevalent in the summer than in the winter. The lower forms, which include strato-cumulus, nimbus, fracto-nimbus, fracto-cumulus, stratus and fog, attain their maxima in the winter months, their minimum frequency being in the summer. The clouds of diurnal ascending currents, cumulus and cumulo-nimbus, are independent of any seasonal variation in hourly frequency, the maxima at noon and 3 p.m. respectively taking place at these hours in every month of the year.

ROYAL SCOTTISH ARBORICULTURAL (ABERDEEN BRANCH).

May 17.—The first excursion for the season, and the largest ever held under the auspices of the Aberdeen branch, took place on the 17th inst., the objective being the beautiful woods of Drum, Deeside, some seven or eight miles from Aberdeen. Mr. A. F. Irvine of Drum, the chairman, awaited the trains at Drum station and heartily welcomed his guests. Praise was heard on every side at the admirable management of the various woods, and many animated debates were occasioned over the fine specimens noticed. An outstanding feature of the excursion was the visit to the old Forest of Drum. William de Irvine received the lands of Drum from Robert the Bruce in 1323 as a reward for services rendered, and notwithstanding the 590 years which have elapsed since the Irvines entered into possession the old Forest of Drum remains to-day almost as it was when first acquired. After luncheon at Drum Castle the party visited the Castle gardens and policies, where some magnificent individual trees were inspected, including the two famous Hollies, believed by many to be the largest in this or any other country.

Publications Received.—***Catalogue of the Plants Collected by Mr. and Mrs. Talbot in the Oban District South Nigeria,*** by A. B. Rendle, E. G. Baker, H. F. Wernham, S. Moore, and others. (London: British Museum.) Price 9s.—***The Oxford Geographies:*** Edited by A. J. Herbertson. ***An Introduction to Plant Geography,*** by M. E. Hardy, D.Sc. (Oxford: Clarendon Press). Price 2s 6d.—***The Nation's Library: The Practical Side of Small Holdings,*** by James Long. ***Modern Views on Education,*** by Thiselton Mark, B.Sc. ***Industrial Germany,*** by Wm. H. Dawson. ***Socialism and Syndicalism,*** by Philip Snowden, M.P. ***Sane Trade-Unionism,*** by W. V. Osborne. ***Eugenics,*** by Edgar Schuster. (London and Glasgow: Collins' Clear-Type Press). Price 1s. net each.—***L'Art du Bouquet,*** par H. C. Clairoix. (Paris: Lucien Laveur). Price 5s.—***Submerged Forests,*** by Clement Reid, and ***Bees and Wasps,*** by O. H. Latter. (Cambridge: University Press). Price 1s. each.—***Garden Craft in Europe,*** by H. Inigo Triggs. (London: B. T. Batsford). Price 35s. net.—***Just a Simple Garden Book,*** by Flora Cazenove. (London: Hodder and Stoughton). Price 1s. net.—***To the Continent.*** A Guide to Places on the Continent by the Great Eastern Railway Company.

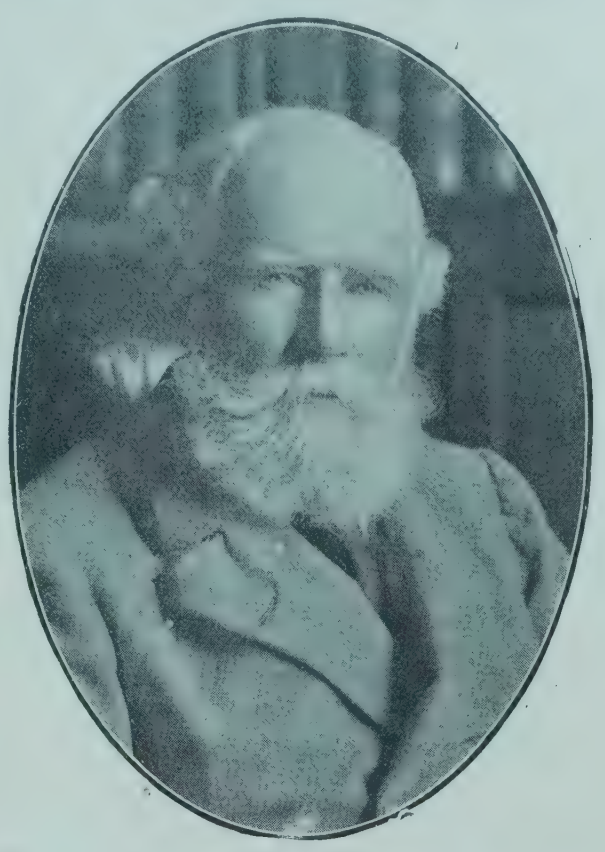
LAW NOTE.

FAILURE OF A NURSERYMAN.

At the Winchester Bankruptcy Court on Tuesday, the 13th inst., before the Registrar (Mr. Charles E. Godwin), the public examination in bankruptcy was held of Charles Walter Breadmore, corn merchant and seedsman, of 120, High Street, Winchester, the receiving order in whose affairs was granted on a creditor's petition on April 2. The statement of affairs, as filed, showed gross liabilities amounting to £8,579 12s. 11d., of which £3,848 18s. 10d. were expected to rank for dividend. The assets (net) were returned at £2,355 9s. 3d., showing a deficiency of £1,493 9s. 7d. Among the assets were the following items:—Stock-in-trade, £550 19s.; machinery, utensils, etc., £321 10s. 6d.; farming stock, growing crops, and tenant right at Colden Common, £350; glass-houses at Colden Common, £400. The causes of failure alleged by debtor were: Competition, loss of business as corn merchant owing to popularity of motor-cars, want of capital, expenditure of upwards of £250 in attempting to form a company, and failure of Sweet Pea crop during the seasons 1911 and 1912. Debtor was allowed to pass his public examination.

Obituary.

Lord Avebury.—We learn with regret of the death of Lord Avebury, which took place on Wednesday last, at Kingsgate Castle, near Ramsgate. Born in 1834, he succeeded to the baronetcy whilst yet a young man, and was known for many years by the title of Sir John Lubbock. One of the most accomplished and versatile men of his epoch, Sir John Lubbock achieved distinction as a man of affairs, a scientist and a writer. His interests in natural history, which developed in early youth, were maintained throughout a long and busy life. It may be that these interests were quickened by his being both a neighbour and friend of Charles Darwin, and evidences of the high opinion which Darwin formed of Lubbock's powers of observation are to be found in the frequent reference which the elder naturalist makes in the *Origin of Species* and elsewhere to the work of his neighbour. There is no need in this place to recount the life of Lord Avebury; but it is meet that we should draw attention to certain of his scientific achievements, particularly those in the domain of natural history. The labours of Sir John Lubbock in the field of natural history were characterised by two remarkable features. First, his ardent and disinterested love of science, and second, the charm and lucidity with which he expounded the results of his observations and reflections. Of his numerous writings the most widely read were those in which science and philosophy were blended, for example, *The Uses of Life*, *The Beauties of Nature*, and *The Pleasures of Life*. Even to more technical subjects, such as *The Origin and Metamorphosis of Insects; Flowers, Fruits and Leaves;* and *Buds and Stipules*, Lord Avebury contrived to impart a grace which many professional naturalists, whilst envying, could not but fail to imitate. Perhaps the most salient feature of his fine and valuable life is the fact that Lord Avebury was a distinguished representative of the amateur student of natural history. It is well for the nation and for science that such men exist, and it is a fact of which we may well be proud that no nation has produced so many of this class of non-professional men of science as has our own. Such men take wider views than the professional student is apt to take. They bring into science some of the detachment and breadth which those who live for science alone are almost bound to lack; and the best among them, like Lord Avebury, have proved that, though non-professional in the sense that they work solely for the love of science, they are as capable of first-rate work as any of their professional colleagues. Of Lord Avebury's facility as a writer it is unnecessary to speak, for the extraordinarily large number and wide circulation of his works demonstrate that he was a ready and pleasing writer, and that the point of view from which he regarded Nature appeals to vast numbers of his fellow men. In concluding our brief notice of this distinguished man we may recall the fact that it was Lord Avebury who presided at the opening of the Wisley Garden, and that on that occasion he



THE LATE LORD AVEBURY, P.C., F.R.S.

defined in a singularly graceful and shrewd speech the functions that such a garden should discharge.

John Methven.—We learn with regret of the sudden death, on the 24th inst., of Mr. John Methven, J.P.., senior partner of the firm of Messrs. Thomas Methven and Sons, nurserymen



THE LATE JOHN METHVEN.

and seedsmen, Edinburgh, established by deceased's father 45 years ago. Mr. Methven was at business until two days before his death, and though he had been somewhat indisposed lately, his demise was not anticipated. He was closely connected with the two important Scottish horticultural societies—the Royal Caledonian and the Scottish Association—and with the Royal Scottish Arboricultural Society. He leaves a widow but no family.

DEBATING SOCIETIES.

British Gardeners' Association (Edinburgh Branch).—At the monthly meeting of this branch of the British Gardeners' Association, held on the 19th inst., a lecture on "Bacteria of the Soil" was delivered by Mr. G. P. Berry, Chief Inspector of Horticulture, under the Board of Agriculture. The next meeting will be held on June 16, when a paper will be read by Mr. T. Waite, of the Edinburgh Royal Botanic Gardens, on "Some Popular Wild Flowers."

Broughty Ferry Horticultural.—The usual meeting of this Association was held on the 20th inst., Mr. James Bethel presiding. Mr. James Robertson, Letham Grange Gardens, delivered a lecture on "The Cultivation of Stone Fruits," dealing with Apricots, Cherries, Nectarines, Peaches and Plums. The lecturer gave practical details of approved methods of cultivation out-of-doors as wall trees, and in the case of Plums and Cherries as standards and bushes in the orchard and garden. He also dealt with indoor methods of cultivation.

SCHEDULES RECEIVED.

Co-Partnership Festival.—The Flower Show will be held in connection with the Co-Partnership Festival at the Hampstead Garden Suburb, Hampstead, on Saturday, July 12. Secretary, Mr. W. H. Brown, 6, Bloomsbury Square, London, W.C.

Hanley Horticultural Fete.—The Horticultural Show will be held at Hanley Park, on Wednesday and Thursday, July 2 and 3. Secretary, Mr. William Poulson, Town Hall, Hanley.

Royal Agricultural Society of England.—The Horticultural Exhibition to be held in connection with this Society will be held from Tuesday, July 1, to Friday, July 4, at Bristol. Secretary, Mr. Peter Blair, Trentham Gardens, Stoke-on-Trent.

The Yorkshire Agricultural Society.—The seventy-fifth annual meeting will be held at York on Wednesday, Thursday, and Friday, July 23, 24, and 25. Secretary, Mr. John Maughan, Yorkshire Agricultural Society, Blake Street, York.

Crewe Memorial Cottage Hospital Fete.—The first exhibition of Roses and Sweet Peas will be held in connection with the fête in the Queen's Park, Saturday, August 9. Secretary, Mr. M. Morgan, Queen's Park, Crewe

Lincolnshire Agricultural Show.—The Horticultural Exhibition will be held on Thursday and Friday, July 17 and 18. Secretary, Mr. Peter Blair, Trentham Gardens, Stoke-on-Trent.

Royal Lancashire Agricultural Society.—The Horticultural Show will be held at Burnley on Thursday, Friday, and Saturday, and Monday, July 31, August 1, 2, and 4. Secretary, Mr. Edward Bohane, Derby House, Preston.

Answers to Correspondents

Aphis and Red Spider on Vines: *J. L.* To destroy Aphis (green fly) it is best to fumigate with a nicotine preparation. For red spider the leaves may be sponged with a little soapy water—half an ounce of soft soap to one gallon of water—mixed with ½lb. of flowers of sulphur and kept stirred. Or if this takes too much time, flowers of sulphur may be applied dry with the Malbec bellows. Or it may be mixed with water containing a little soft soap and applied in the form of a spray by placing the finger against the nozzle of a syringe. If less than a month has elapsed from the commencement of the flowering, sulphur will be apt to cause a little rust on the young berries, and you must choose between this and the depredations of the insects. There is no difficulty if the fruit is gathered before the end of August in thoroughly eradicating red spider by the liberal use of sulphur, but it must be applied while the sun has sufficient power to partially vaporise it, closing the house for the purpose on two or three bright days. Campbell's sulphur vaporiser will also kill red spider and may with advantage be used after the fruit is gathered and before hibernation of the spider commences.

Azalea indica Diseased: *C. H.* The Azalea leaves submitted for inspection have been attacked by a fungus—a species of Exobasidium which has caused the swellings. The galls should be removed and burnt. If this is done at once the same plants will probably be free from attack next year.

Buttercups on Lawns: *C. S.* Eradication of the roots of the Buttercups is the best plan, but as you object to this on the score of labour your only alternative is to apply nitrogenous

manures which will cause the grass to grow so luxuriantly as in time to crowd out the weeds.

Chrysanthemum W. H. Lincoln: *J. T. D.* Your Chrysanthemums are decidedly late in flowering, but we have many times known Chrysanthemums to bloom at almost all times of the year. Many of the single varieties, and especially seedlings, will, when cut down after blooming in the autumn, develop large quantities of bloom from the suckers, and these, if afforded water and food, will make quite a show of bloom. At the International Show at Chelsea last year Messrs. W. Wells and Co. staged a good exhibit of Chrysanthemums, several types of the flower being represented. One bloom of the variety Queen Mary measured 5 inches across and the same in depth. Many Japanese varieties that develop buds on the early cuttings will bloom from these if the plants are rooted quickly and kept growing in a little warmth.

Culture of Large Chrysanthemums: *W. B. W.* (*Johannesburg*). The climate of Johannesburg may not be an ideal one for the cultivation of large Chrysanthemum blooms, as the summers are considerably hotter than we have in England. In the first place you should secure good cuttings of the best large-flowering varieties about a month or six weeks after the plants have been cut down. If several are rooted in a pot, or in boxes, they must be potted off before the roots become matted together. At various stages employ pots 2½ inches, 4 inches, 6 inches, and 9 or 10 inches in diameter, the largest being the flowering pots. The soil at the last potting should be made very firm, and after the plants have made the first break three shoots only should be retained, slinging these by matting from a central stake, or a stake may be placed to each shoot. If the summers are very hot, it may be advisable to plunge the pots half way in ashes or some similar moisture-holding material, taking precaution against worms entering the drainage holes. The plants might be so arranged that tiffany can be stretched over them during the hottest part of the day, as this would encourage a free growth without which it is impossible to obtain good blooms. For the more minute details of cultivation, we should advise you to read *Chrysanthemums*, by Mr. Thomas Stevenson, in the Present Day Gardening Series. This work gives the various methods of cultivation for the different sections of Chrysanthemums, also lists of the best varieties. The work may be obtained from our publishing department, price 1s. 6d., excluding postage.

Gardenia Diseased: *Gardenia.* Botrytis cinerea is the cause of the injury, and this fungus only flourishes in a very damp atmosphere. Admit as much air as practicable, and spray the plants with liver of sulphur at a strength of one ounce in four gallons of water.

Grasses and Trees for Sea Coast: *A. Campbell.* You will find the following grasses suitable for your purpose:—Cynosurus cristatus, Festuca duriuscula, Poa pratensis, and P. memoralis. You would, however, do well to apply to a firm of seedsmen who supply special mixtures for various purposes. Trees suitable for a position such as you describe, in an exposed position near the sea, where the roots may be washed with the waves, are Common Ash (Fraxinus excelsior), White Poplar (Populus alba), Lombardy Poplar (Populus nigra var. pyramidalis), White Beam (Pyrus Aria), and Austrian Pine (Pinus Laricio var. nigricans). A descriptive book on trees and shrubs, by Mr. W. J. Bean, the Assistant Curator at the Royal Botanic Gardens, Kew, is to be published shortly by John Murray, Albemarle Street, London, W. You would be well advised to wait until you can obtain this. Weeping trees are usually pendulous by nature, but this habit can be encouraged by training. They usually originate as sports from ordinary trees, and are perpetuated by grafting upon stocks of their respective types. In some cases it is necessary to tie the leading shoots to stakes in order to induce the trees to grow to the desired height; but in other cases the leading shoots remain moderately straight, while the side branches only are pendulous. Trees which assume the appearance of an umbrella are often encouraged to develop in width by placing an iron hoop round the bases at the desired distance. The hoop is supported on stakes, and the branches trained over the hoop.

Manure for Examination: *F. W.* We do not undertake the analysis of manures. Where horses are given physic frequently the manure may contain substances injurious to plants.

Names of Plants: *Nemo.* The variety of Rose resembles Lady Waterlow. You should have sent a piece of the growth and more foliage.—*Rosary.* Paulownia imperialis. *Cork.* 1, Viola splendida; 2, Saxifraga seedling; 3, Primula Veitchii; 4, Erinus alpinus; 5, Saxifraga granulata flore pleno; 6, Saxifraga cæspitosa.—*C. P. & Co.* Specimen too scrappy to identify.—*Tarragon.* 1, True Tarragon (Artemisia Dracunculus); 2, False Tarragon (A. dracunculoides).—*L. Y.* 1, Erigeron philadelphicus; 2, Cardamine pinnata; 3, Tellima grandiflora; 4, Cytisus hirsutus var.; 5, Genista pilosa; 6, Veronica gentianoides.—*J. E.* 1, Silene acaulis; 2, Spiræa sp. Cannot identify without flowers.—*F. O.* Cochlioda sanguinea, not Cochlioda rosea, which has flowers resembling small Cochlioda vulcanica.—*R. T.* 1, Bulbophyllum auricomum; 2, Stelis ophioglossoides; 3, Oncidium flexuosum; 4, Brassia verrucosa.—*A. C. H.* 1, Strelitzia reginæ; 2, Hedychium Gardnerianum; 3, Akebia quinata; 4, Rubus species, flowers dropped; 5, Cassinia fulvida, often called Diplopappus chrysophyllus in gardens; 6, Santolina Chamæcyparissus variety incanum (Lavender Cotton).—*Bellamy.* Rose Bridesmaid.—*C. B.* Anemone Alpina var. sulphurea.

Names of Fruits: *C. R.* Apples: 1, Newton Wonder; 2, Augusta Germain; 3, Broad Eye Pippin.—*T. D.* Apple: Hanwell Souring.

Orange Fungus: *G. M.* The Orange fungus on the Briar is a destructive parasite and spreads rapidly. Remove all diseased portions and spray the tree with liver of sulphur. This liquid turns white paint black, and if used in glasshouses take care not to wet the woodwork.

Peach Leaves: *A. G.*—There is no disease present in the specimens sent. The treatment mentioned probably caused the leaves to fall.

Pæonies Diseased: *A Constant Reader.* The disease is caused by the fungus Sclerotinia. Remove all diseased portions of the root, and treat the soil with superphosphate. Lime favours the disease.

Peach and Nectarine Diseased: *V. S. M. P.* The trouble is caused by the brown rot fungus. Remove the diseased branches, and thoroughly drench the trees next winter with a solution of bluestone—1 lb. in 30 gallons of water.

Peaches Diseased: *A. J. C., J. H. W.* The Peaches are affected with Peach blister (Exoascus deformans). Remove any diseased leaves when they are seen and burn them, and prune back the branches which bear the diseased leaves beyond the point of infection. Spray the trees with dilute ammoniacal solution of copper carbonate.

Peaches: *D. W.* Peach mildew is present on the fruits. Spray the tree at intervals of four days with a solution of liver of sulphur at a strength of 1 oz. in 3 gallons of water. Spray them also next spring, when the leaves are unfolding.

Pear Blossom: *H. P.* The flower shows a remarkable case of petalody, or duplication of the petals, some of which are an unusual size. Plants of the N.O. Rosaceæ, which include the Pear, exhibit this abnormality very freely.

Plum Shoots: *H. E. K.* Monilia fructigena, "brown rot" disease of Apples, has killed the shoots. All diseased branches should be removed, and the trees sprayed with the Bordeaux mixture. Next winter drench the trees and the surrounding ground with a solution of bluestone—1 lb. in 25 gallons of water.

Syringing Vines in Flower: *J. Lee.* Some growers practise syringing vines whilst they are in flower, but it is not necessary, and in the hands of the inexperienced may do mischief. Fertilisation is not likely to take place whilst the pollen is wet, and the only excuse for syringing is to revive vines which have been allowed to droop from improper treatment.

Strawberries Unhealthy: *B. G.* Mildew is present on the foliage. It is too late to spray the plants now, but next season, when the leaves are half-grown, spray them with Bordeaux mixture diluted to half the usual strength, and repeat the spraying at intervals of ten days until the flowers open.

Sunflower Plants: *Constant Reader.* The injury is not due to insects or fungus, but probably to excess of nutrition.

Tomato Flowers Dropping: *J. L.* Flowers of Tomatos will drop without setting their fruits if the plants are grown in insufficient light, confined air, or in soil which is too light in texture. If the soil is light and loose it may even now be rammed firmly. It is a good plan to gently shake each plant in the fore part of the day to disperse the pollen when it is dry.

Tulips Diseased: *G. M.* Lily disease is present. It would be wisest to remove and burn all the bulbs, rather than risk infection of other valuable kinds. Treat the soil with lime.—*Mrs. L.* Lily disease has attacked the Tulips, and in all probability the soil is infected with the disease, and should be treated with lime. If the bulbs are well matured and dry before storing they might be all right next season.

Vallota purpurea: *Sanderson.* This plant is often spoiled by too frequent disturbance at the root, as it is always at its best when well established and root-bound. Cultivators differ as to the best time to re-pot the plants; we advise re-potting them after they have flowered, which is generally during August. If the roots are in an unsatisfactory condition they should be turned out of the pots and all the old soil washed from them, carefully cleaning away the decaying material from the base of the bulbs. Lay the plants out to dry and re-pot them in a compost consisting of medium loam, with the addition of some leaf-mould, charcoal, and sufficient sharp sand to keep the whole porous. As they should remain in the same receptacles for several years, it is essential that the pots be drained very carefully. Place five good bulbs in each 6-inch pot, cover them with about 1 inch of soil and pot firmly. This is the most critical period of their cultivation, and they require to be watered very carefully, keeping them on the dry side until they have made plenty of roots. Usually they require a cool-greenhouse treatment, but after re-potting and until they are re-established they are benefited by a closer and warmer atmosphere. They should be grown at all times in a light position near to the roof-glass. During the winter water must be afforded sparingly, but do not fall into the too frequent mistake of drying them off; for, unlike the bulk of South African bulbs, the Vallota is evergreen and should be kept growing during winter. In the summer, when growing freely, well-established plants require plenty of water, and if the pots are filled with roots they are benefited by frequent applications of weak liquid manure or soot-water. If large specimens are required they should be re-potted without disturbing the roots. When growing freely they form numerous small offsets, which should be removed, as they tend to weaken the flowering bulbs. In many establishments this plant is notoriously difficult of cultivation, and if it is doing well it should be left severely alone, as it too often proves troublesome to establish again after re-potting.

Vines: *W. H. M.* The damage was probably caused, as you suggest, by the substance on the hot-water pipes.

Viola Maggie Mott: *C. H. P.* (*Hampstead*). A soil fungus, Rhizoctonia, is destroying the stem and root. The soil is infected and should be dressed with lime. Watering the plants with a solution of sulphate of potash may do good.

Communications Received.—J. M.—W. V.—P. M. K.—C. B.—L. T. C.—G. M.—J. W.—W. B.—E. S.—A. M. E.—R. J. W.—T. C.—W. B. H.—T. P. E.—E. A. B.—G. G.—C. H. P.—E. H. W.—B.—J. L. G.—W. M.—H. C. L.—E. T. C.—J. A. J.—A. P. L.

THE
Gardeners' Chronicle
No. 1,380.—SATURDAY, JUNE 7, 1913.

CONTENTS.

Apple-breeding in Canada	384
Bauhinia variegata	378
Books, notices of—Livre d'Or du Monde Horticole	386
Books, sale of gardening	385
Cabbage, the manuring of	387
Cabbages, early	388
Camphor for snails	385
Carrots, the manuring of	386
Commercial plant, a valuable	387
Copper sulphate, adulterated	385
Corn crops, the	386
Crown gall disease	387
Douglasia lævigata	381
Elm, dangers of the	386
Flour paste as an insecticide	384
Foreign correspondence—Linum campanulatum	381
France, crop prospects in	386
Fream memorial prize	384
Fruit farming in Canada	386
Fruit prospects in Blairgowrie	388
Fruit-tree buds, the ice box method of keeping	386
Germinator, a simple	386
Gould, Mr. J. C., retirement of	385
Howe, Mr. William, presentation to	387
Humea elegans	387
Law note	392
Limonia Poggei var. latialata	378
Market fruit-garden, the	377
National Tulip Show, the	388
Obituary—Don, Alex. L.	394
Kwing, Wm.	394
Fraser, James	394
Hemming, George	394
Hill, Daniel	393
McKinlay, George	393
Omphalodes cornifolia	380
Orphan Fund, Royal Gardeners'	386
Pests, scheduled—The Nun Moth	380
R.H.S. and new plants, the	387
R.H.S. criticised	388
Rosary, the	378
Rose alba	388
Royal Counties Show	385
St. Petersburg Botanic Garden, bicentenary of the	385
Silver leaf disease	388
Smith, Mr. A. C., appointment of	385
Societies—Bath and West of England Agricultural	391
General Bulb Growers'	392
Linnean	392
Manchester & North of England Orchid	392
Royal Horticultural	388
Terminological exactitude, on	386
Teucrium hircanicum	387
Walnut, the	387
Week's work, the—Flower garden, the	383
Fruits under glass	383
Hardy fruit garden	383
Kitchen garden, the	382
Orchid houses, the	383
Plants under glass	382
Public parks and gardens	382

ILLUSTRATIONS.

Bauhinia variegata flowering in Manik Bagh, Indore	379
Douglasia lævigata	381
Limonia Poggei var. latialata, foliage of	378
Nun Moth, the (coloured supplement).	
Omphalodes cornifolia	380
Orchids, a group of, exhibited by Messrs. Armstrong and Brown	385
Roses, budding	379
Saxifraga longifolia and S. pyramidalis, as grown at Hayes Place gardens, Kent	389, 3 0

THE MARKET FRUIT GARDEN.

THE heat wave of the last week of May, sustained beyond recorded precedent for the month—the temperature having reached 80° or more at Greenwich on five successive days—facilitated the destruction of weeds by horse or hand hoeing; but there is reason to doubt whether it was otherwise beneficial to fruit. It appeared at least to encourage the rapid multiplication of aphides and to hasten the withering of leaves smothered with this pest, which is ubiquitous in its swarming multitudes in the present season. Also it brought into visible prominence some other attacks or defects to be noticed presently. The appearance of orchards is always at its worst at about the end of May, when the dropping of Plums, Pears and Cherries that have failed to swell is in progress. The withering of abortive Apple blossom disfigures the trees, and there has not been time for the growth of fresh foliage to make good more or less the destructive work of the aphis and the caterpillar. But I cannot recall a previous season in which there was as much disfiguration of the orchards, on the whole, as there is at the present time.

Whatever the ultimate results of the fruit harvest may be, it cannot be denied that the present outlook is an extremely disappointing one, at least so far as the fruit is concerned. A few weeks ago, in their turns, Pears, Plums, Cherries and Apples, or at least most varieties, showed a great profusion of blossom which appeared to be healthy and vigorous. Now there is something wrong, more or less generally, with all these fruits. As to small fruits, Strawberries are promising, and in my orchards Gooseberries have cropped well and Currants were never better. From some districts, however, reports complain of Gooseberries having dropped to a serious extent, and of Blackcurrants being much injured by the aphis. Raspberries have not been very flourishing at any time during the present season. Before defining the "something wrong" in relation to each of the classes of the fruit it is desirable to notice two general causes of deterioration:—Attacks of insect pests and the presence of fungous diseases. As to the former, Apple suckers and caterpillars have rarely been less troublesome in my orchards; but the sucker is, or was, in strong force in some districts. With respect to the latter infliction, there are no mitigating circumstances.

An Aphis Season.

This worst of all insect pests has rarely been more destructive than it is this season. It swarms on Gooseberries, Blackcurrants, Plums and Apples alike. Spraying, as usual, in relation to the leaf-curling species has proved practically useless. The only time when this pest can be effectively countered is when the mother queens first appear on the trees, before the foliage opens, and in the case of Apples when the insects are in the trusses of unopened blossom buds. For my own part I have never been able to find mother queens, except one or two in an orchard on trees before the buds burst. I have killed some aphides when spraying, mainly against the Apple sucker before the opening of the blossom; but there are always enough left alive to produce millions on a tree in less than a week. After the leaves have begun to curl on Plums or Apples spraying is a waste of labour and money. I have given up spraying Plums for the aphis, having found the uselessness of the operation in past years, and, except in the case of young trees, I spray Apples after the curling of leaves only where there are Apple suckers. As the latter pest increased in number on some varieties after the expansion of blossom some Apples were sprayed twice, and one was treated thrice. Yet on most of these varieties the clusters of leaves around trusses of fruit are thickly covered with aphides, and it is hardly conceivable that they could have been worse infested if no spraying at all had been done. The injury to yield and quality of fruit cannot fail to be very serious, and this remark applies equally to Plums and to Blackcurrants where they are badly infested. By the way, the only effective plan of treating aphis attack on Currants is that of dipping the infested shoots into vessels containing an insecticide. A few women get over a large acreage in the course of a day or two.

A Fungous Disease Season.

Some weeks ago an exceptionally bad attack of fungous diseases was predicted as the result of the excessive rainfall of last summer, autumn, winter, and the first two months of the spring. A great development of canker on varieties subject to that disease had already been noticed. Since that time by far the worst attack of brown rot that I have ever seen has been developed. In my oldest Plum orchard it has destroyed almost the entire crop of Gisborne Plums, half the crop of Pond's Seedling, fully one-fourth of the crops of the Czar and Monarch, and smaller proportions of Early Prolific and Victoria. Besides, multitudes of fruit spurs and not a few branches or portions of branches have had to be cut off the trees. This is probably an exceptionally severe attack, and, indeed, in a younger Plum orchard the injury is comparatively trifling. But two mycologists inform me that brown rot is widely prevalent this season. Only once before has the disease affected Apples seriously in my orchards, and then it attacked only one or two varieties; whereas this year it has done more or less damage to at least half a dozen.

The attack of scab is also the most extensive in my experience, showing on the leaves of varieties of Apples not previously liable to it, and on the tiny fruitlets of some varieties; while nearly all the very few Pears on my trees are already scabby. All scab-infested trees, except those of one variety which is hopeless, have been sprayed with lime-sulphur, and will need to be treated again later, perhaps more than once. But, whatever may be done, I venture to predict that there will be an exceptionally large proportion of scabby Apples and Pears in the markets hereafter.

Now let us consider the "something wrong" in reference to each of the tree fruits, bearing in mind the fact that, in my district, the only frost that could have done injury was one which occurred in the early hours of April 13. Only 4° were registered in the lowest parts of my orchards and the trees were dry at the time.

Pears.

Pears were the first to go off. There was the finest display of blossom on my trees as a whole that they have ever borne, not a single variety excepted. Yet the crop is almost a total failure. If 4° of frost when trees are dry will kill Pear blossom or fruitlets, the loss may be attributed to the frost of April 13, a period when Pears were in or just off blossom.

Plums.

Most varieties were in blossom before April 13, up to which date there had not been any considerable frost in my district. All varieties blossomed well or fairly, and no injury to blossom still out on the date named could be detected on examination

a day or two after the frost. For my own part I do not believe that 4° of frost would kill either blossom or fruitlet when trees were dry. At first the blossom appeared to have set well, but at least nine fruitlets in ten failed to swell and have dropped or will drop off. Apart from the great damage done by brown rot, which attacks fruit spurs mainly, the yields of Early Prolific, Monarch and Pond's Seedling will be extremely small, and that of Gisborne next to nothing. Czar and Victoria will be fair crops with me if further dropping does not take place instead of the great crops which set in the first instance. From many parts of the country there are complaints of the wholesale dropping of Plums, and probably the misfortune is general, and will be more obvious when the fruitlets which have not swollen properly have fallen.

CHERRIES.

Cherries also blossomed profusely on the few trees grown by me, but the crops of the early varieties have proved almost complete failures. Similar results are reported from several districts.

APPLES.

There was such a great display of blossom on most varieties of Apples that the withering of a considerable proportion of the trusses was to be expected. The withering, however, is more extensive than usual on many varieties, and on two in my orchards it is complete. The blossom of Duchess of Oldenberg in three orchards, the trees being of different ages in the three cases, has dropped entirely, and there is also almost complete defoliation. This variety was partially in blossom when the frost of April 13 occurred; but so were Irish Peach and Bismarck, which were not injured. Duchess of Oldenberg was badly attacked by brown rot, which, however, cannot be held responsible for the complete destruction noticed. Specimens of withered trusses of blossom have been sent to Mr. Barker, whose letter on bacterial damage appeared in this journal (see p. 287), with a request for examination. A beautiful Siberian Crab in my garden has also had its blossom completely destroyed, and is now almost entirely defoliated. It was not in blossom till some time after the frost. Apart from these exceptional cases the damage done to the Apple crop by aphis, Apple sucker in some places, and fungous diseases generally, as well as the extensive withering of blossom, will probably reduce the yield to a moderate one of inferior quality in place of the great and sound crop at one time anticipated. My own opinion is that frost does not account for much of the injury to Plums or Apples, which, it seems to me, may be more reasonably attributed partly to the wet and cold condition of the soil up to the middle of May, partly to the unfavourable weather for the working of bees and other pollinating insects, and partly to insect and fungous attacks. *A Southern Grower.*



FIG. 159.—LIMONIA POGGEI VAR. LATIALATA (half natural size).

LIMONIA POGGEI VAR. LATIALATA.

LIMONIA is a tropical genus of shrubs or small trees closely related to Citrus. It has not yet acquired any particular horticultural interest, though some of the species recently discovered in tropical Africa may turn out to be useful, as their fruits are edible and they appear to grow and fruit freely. The plant in gardens that most nearly resembles them is Ægle sepiaria, known also as Citrus trifolia, Limonia trifoliata, etc. This plant has been hybridised with the Orange, Citrus Aurantium, a proof of their near relationship, and it is more than likely that the true Limonias would cross with the Orange and Lemon family. The African species of Limonia are L. Demeusei, L. gabunensis, L. Lacourtiana, L. Poggei, L. Preussii, L. Schweinfurthii and L. Warneckei. They are natives of equatorial regions, including the Congo, where the species here figured was discovered by M. Gentil in 1900, and afterwards introduced into the Brussels Botanic Gardens, where there are now good bushes of it. There is also one in the Kew collection, from which our drawing was prepared. This plant has been called L. Lacourtiana, but it does not agree with the figure and description of that species published in Wildeman's *Ann. Mus. Congo*, Ser. v., 159, whilst it does agree with the description of L. Poggei latialata in the same work. The leaves (fig. 159) are remarkable. They are three to five foliate, with the petiole and rachis so broadly winged as to be leaf-like. Citrus itself has the same character in a minor degree, the leaf being really compound, with a single leaflet (1-foliate), and in some species the wings of the petiole are quite large, as in C. Hystrix, which has a petiole more leaf-like than the leaflet itself. Some of the Oranges have petioles with very pronounced wings. The only marked differences between Citrus and Limonia in addition to that of the leaves are in the shape of the calyx, and in Citrus having a larger number of stamens and fruit divisions. One would not be far out in calling these Limonias African Oranges, notwithstanding the Asiatic habitat of several species.

BAUHINIA VARIEGATA.

BAUHINIA VARIEGATA is a deciduous tree of moderate size with irregular masses of dark-coloured wood near the centre. The leaves are as long as broad, with 11 to 15 nerved leaflets connate beyond the middle. The genus belongs to the Nat. Ord. Leguminosæ, and is said to take its name from Bauhin, the twin brothers and botanists, as each of the leaves is composed of two leaflets joined at the base. With care the tree establishes itself here in three years, and requires little care afterwards, but it needs an open, sunny situation. It begins to bloom in the third or fourth year if well grown, and bears in profusion large fragrant flowers, which are almost sessile. The calyx-tube is cylindric. The petals are obovate or oblanceolate, and two inches long. The flowers have beautiful white and purple shades, which begin to appear in December and January, but the trees are in full bloom in February and March.

The species is propagated by seeds and cuttings, preferably by seeds, as it is a quick-growing tree.

The flowers and pods are eaten as vegetables. The wood is hard and brown, but is seldom used. In Indore this tree is planted largely in gardens and avenues for ornamental purposes.

The illustration (see fig. 161) of Bauhinia variegata in flower is from his Highness the Maharaja Holkar's garden, the Manik bagh, at Indore. *C. M. Tembe, Superintendent, State Gardens.*

THE ROSARY.

MR. CUTBUSH ON "THE PROPAGATION OF THE ROSE."

The annual general meeting of the Potters Bar and District Amateur Rose Society was held on May 27. After the usual business the chairman (Rev. J. A. Forrest) called on Mr. W. H. Cutbush to give his address on "The Propagation of the Rose."

The lecturer was assisted by M. Boytard, who, during and after the address, illustrated the remarks of Mr. Cutbush by a demonstration of the art of budding. Many members were interested in the curious French budding knife he used for the purpose. In this knife the blade is of an unusual shape, with a pronounced bulge in the upper half, and a sharp point, while the opposite or basal end of the knife, instead of being flattened like a paper knife, as in the ordinary English budding knife, had a thin ivory blade which shut like a penknife. In M. Boytard's clever fingers this was certainly very effective, but Mr. Cutbush stated that his men, who had got accustomed to the English form of knife, did not care to use the new pattern.

Mr. Cutbush's address was as follows:—

"The principal method of propagating the Rose is by budding, and it is with that I pre-

pose to deal. Budding is effected by the insertion into a wild stock of a bud of the Rose we wish to increase (see fig. 160).

"There are four kinds of stocks usually employed for budding dwarf Roses.

"(1) The seedling Briar, which may be used for any kind of Rose, and is particularly useful for Tea Roses; (2) Briar cuttings, which may also be used for almost all varieties of the Rose. The cuttings are taken in October, and it is most important to remove all the buds or eyes from the cutting except two or three at the top; otherwise later on it will be found that trouble from suckers will occur. The cuttings are allowed to root and grow the first year, and are planted where they are to be budded in the following

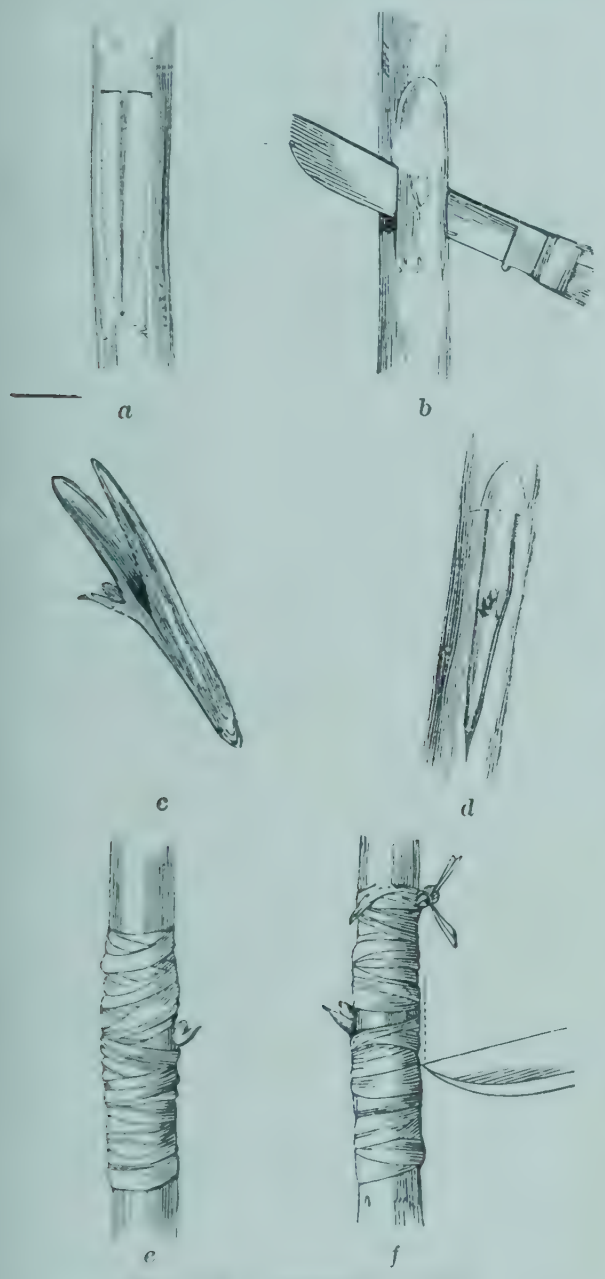


FIG. 160.—BUDDING ROSES.

a, Making the slit in the stock; *b*, Slicing off a bud; *c*, Separating the shield from the wood; *d*, The bud inserted but not cut off at top; *e*, The bud bound with raffia; *f*, Loosening the tie after the bud has commenced to grow.

autumn, or perhaps better still about March in the spring of the subsequent year.

"(3) Cuttings of the De la Grifferaie stock; and (4) of the Manetti or Italian Briar are taken very much in the same way.

"All Roses last longest on the seedling Briar, but they are not always the strongest the first year of their growth as maidens. Briar cuttings, as I have mentioned, may be used for all varieties of Roses but they differ somewhat from the seedling Briar. The roots are not always formed evenly all round the base of the cutting, which may be a disadvantage. However, the Briar cutting is specially good for early bark, the maiden blooms coming into flower [illegible] in the year than on the seedling [illegible]

"The De la Grifferaie stock is very good for very strong growing Roses such as Climbing Teas and H. T.'s and extra strong Teas and H. T.'s

The Manetti stock, which once had a great vogue, is now almost exclusively used for Hybrid Perpetuals, and particularly when these are to be grown only as maidens.

"Whatever stock is employed, care should be taken not to plant it too deeply. The part to be budded in the seedling Briar is the collar of the plant, and this should be only just beneath the surface of the ground. [The lecturer here indicated on different specimens the exact depth at which they should be planted.]

"When the stocks have grown and budding is about to commence, the soil should be drawn away from the stems to the depth of 2 inches. The bark is softer just below the surface of the ground, and is there in the best condition for budding. If it is found that the stocks are at all dry, and that the bark does not open well, it is best not to try to bud, but to give the plants a thorough soaking with water, and to cover the stems up again. After a day or two it will generally be found they can be budded satisfactorily.

"After budding is completed the buds should be tied in Raffia, which is the best material for the purpose. Then comes a point on which practice varies somewhat. Some recommend that the buds should be covered up, others leave them exposed. Personally I think that if they are to be covered at all it should be with very light, sandy soil. I believe, however, that there is this disadvantage in covering the bud; that though it affords protection during the winter, it causes the growth to start too early the following spring, and hence renders the bud more liable to injury from frost and bad weather. Subject to this, nothing further need be done to the plant after budding until March in the following spring. Then the Briars are cut down to just above the place where the bud was inserted, and subsequently all wild growths are to be removed. When the growth is large enough it is to be tied to a support, and if this is not done it is liable to be torn or shaken out by the wind, and the year's work is wasted.

"Standards are usually budded on the Briar, and the wild Briars from the hedges are generally used. When they reach the nursery they are found to have been sent with big knobs at the base like those of walking-sticks. On their arrival these knobs are chopped off by an axe or hatchet, and it is of importance that this should be done properly. The cut should be made underneath and in a sloping direction. All the growth on the stem should be cut off clean and close to the stem. We then have a clean stick, and the standard Briar is then firmly planted.

"In the spring young shoots will start from many parts of the stem, and as soon as they are a few inches long all except three or four at the top should be cut off. It is in these young



FIG. 161.—BAUHINIA VARIEGATA FLOWERING IN MANIK BAGH, INDORE.

See page 378.

shoots, and close up to the stem, that the buds are to be inserted at budding time, and after budding nothing should be cut off that season from the shoots in which a bud has been inserted, but if all of them are not used those that have not been budded may be cut away. In the following spring the budded shoots are cut back to a few buds beyond the point of insertion of the bud. The wild buds that start above the bud ought not to be pinched in all at once, but this should be done gradually. About a week or more may be allowed for this operation. If pinched in too suddenly the bud may even be pushed out by the rapidly rising sap.

"When we wish to begin budding the first thing to do is to select what we call a stick of buds of the Rose we wish to propagate. The stick should consist of a stem of wood that is almost ripe. If we take the stem of a shoot that has just flowered, on which the flower has faded about three or four days ago, it will, in all probability, be about right. Having cut the stick, the first thing to do is to cut off the leaves, leaving about two-thirds of the stipules at the base of each leaf stalk. The object of this is to prevent the bud flagging, for a flagged bud is of no use. If you are in your own garden, and intend to use the buds at once, the stick may be put into a pail of water or a vase to assist in keeping the buds in good condition. If, on the other hand, the stick is cut in another garden, the stick should be wrapped up in wet moss, and the whole covered up in greased paper with the same object. In this way the buds may be kept fresh even for some days.

"When you come to use the buds those at the top will probably be of little value, being too soft, and if an attempt is made to prepare them as buds when the wood is pulled out at the back the whole bud will come with it. So will it also if the bud is too old.

"The buds in the middle of the stick will be the best, and in cutting them the cut should be made as thin as possible, and great care taken not to bruise the bud in putting it under the bark of the stock. In pulling out the bud the operation should be performed with a quick jerk. If it is done too slowly the bud may be injured.

"When the bud is in its place under the bark of the stock in the slip made for its reception it has to be tied in, and this is now generally done with a strip of Raffia. It is most necessary that the bud should be tied in firmly, a loose tie means a dead bud, but the force used must not be so great as to bruise the wood.

"In conclusion, a word of warning. Never bud on a rainy day, or when the stocks are wet."

PERPETUAL-FLOWERING CLIMBING ROSES.

AMONG the many subjects discussed at the International Conference on the modern development of the Rose, held by the National Rose Society in May of last year, few were so instructive as those bearing on the frequently-expressed desire for more continuous-blooming climbers.

In order to help the amateur in his selection of a few of the best of this type already available I will name some that have proved themselves reliable in that respect. Included with climbers are also those suitable for pillars of good height and for arches or pergolas.



Photograph by R. A. Malby.

FIG. 162.—OMPHALODES CORNIFOLIA: FLOWERS BLUE.
R.H.S. Award of Merit, March 18, 1913.

ARDS ROVER is a finely-shaped flower of good size, exquisitely scented. The colour is deep crimson, shaded with maroon, and the foliage is very handsome.

Climbing Caroline Testout, Kaiserin Augusta Victoria, La France, Lady Ashtown and Mrs. W. J. Grant are simply extra strong growing sports of the originals, but are not quite the style of Rose I am now recommending.

GRAF ZEPPELIN has been very good here. It has much of the character found in the well-known Grüss an Teplitz, and rivals it in colour. A splendid grower and bloomer.

JKOR D. BARONESSE VAN ITTERSUM is another deep scarlet-crimson upon an orange and red ground. Glossy, deep green foliage, and one of the best newer varieties.

EXCELLENTZ KUNZE—also new—exhibits pretty shades of cream and yellow. The flowers are small, double, and sweetly scented.

KOMMERZIENRAT W. RAUTENSTRAUCH—new—delicate salmon with a yellow centre.

MADAME ALFRED CARRIERE is one of the best known varieties, and, like the old Gloire de Dijon, can scarcely be put in the wrong place.

REINE OLGA DE WURTEMBURG gives us a vivid red that makes a grand show early, and then a lesser display for a very long time.

There is a strong demand for more continuous blooms among the beautiful Hybrid Wichuraiana section. We want varieties like Crimson and Blush Rambler, also Dorothy Perkins and Gardenia in a decided and continuous show; not necessarily so dense as these come during their single display, but something that will enliven the mass of foliage that is all these afford during the greater part of the season. If we can get more really good sports from the Dwarf Polyantha section, such, for example as

CLIMBING MRS. W. H. CUTBUSH, which has come from America, much of our difficulty would be overcome. This I believe to be a really beautiful novelty. Jessie, Erna Teschendorff, Phyllis, Annechen Müller and a few more in the same vigorous style of climbing growth would fill the existing blank. *A. P.*

OMPHALODES CORNIFOLIA.

PLANTS of this species of Omphalodes were exhibited at the meeting of the Royal Horticultural Society on March 18 by Mr. M. Prichard under its synonym, O. cappodocica, and the plant was given an Award of Merit by the Floral Committee. The flowers are a beautiful clear blue, set off by a small white eye. They are ½ inch in diameter, and rise some 6 or 8 inches from the ground in loose, erect cymes. The plant is not new to gardens, but is somewhat rare in cultivation, and, in view of the present taste in rock and Alpine gardening, it will undoubtedly be much appreciated.

DESTRUCTIVE INSECTS AND PESTS SCHEDULED BY THE BOARD OF AGRICULTURE AND FISHERIES.

XI.*—THE NUN MOTH.

(See Coloured Supplement)

THE Nun Moth (Liparis monacha L.) is a serious pest of coniferous trees on the Continent, with a preference, according to Schlich, for Scotch Pine and Spruce. It also attacks orchard and other broad-leaved trees. The moth is far too plentiful in certain Continental countries, but though it is found in several localities in Great Britain, chiefly in the southern counties, it is nowhere abundant, and appears to feed chiefly on the Oak.† "It is rare in this country, and though it is believed to exist in many parts of England south of Yorkshire it is perhaps commonest in the New Forest. There is no recent record of its appearance in large numbers here, or of its having caused serious damage, but it is one of the most serious pests of Forestry on the Continent."‡ The damage is done by the caterpillars eating both the buds and the full-grown needles. The older trees of Scotch Pine and Spruce seem to be preferred, and in the former the tops of the needles are bitten off and the remainder eaten, while in Spruce the needles are devoured completely from the apex downward. The young larvæ bore into young tender shoots. Nisbet writes§: "The caterpillars can decidedly be termed polyphagous, although not omnivorous. They seem to have an undesirable preference for Spruce and Pine woods, in which they primarily appear to obtain a footing before any great plague of moths occurs. From an economic point of view they do more damage to Spruce than to Scotch Pine. The succulent Larch, Silver Fir, and Weymouth Pine also yield them tooth-

* The previous articles appeared on September 27, October 12, November 2, and December 7, 1912; and on February 1, March 1, March 15, April 26, May 3, and May 24, 1913.

† So much is this the case that Schlich says most British lepidopterists seem to be unaware that it is a conifer feeder.

‡ *Ann. Rrt. Intel. Div., Bd. Agric. & Fisheries*, Cd. 5470, 1909-10.

§ "The Black Arches, Nun, or Spruce Moth," *Trans. Highland & Agric. Soc.*, 1893.

some food, but they care little for the ranker flavour of Juniper and Yew. Among broad-leaved deciduous trees Beech is most attacked, then Hornbeam and Birch. Oak cannot be said to be frequently attacked, and still less frequently Maple, Sycamore, Elm, Aspen, Lime and Saugh. Alder, Ash and Horse-chestnut appear not to be at all liable to danger from the caterpillars. In gardens Apple trees are liable to attack, whilst Pear trees appear exempt. When impelled by want of food they also attack Hawthorn, Hazel, and the numerous shrubs and weeds forming scrub and undergrowth in the forests, or growing in their vicinity." Caterpillars often occur in such hordes that the trees may be completely defoliated, and this may occur for three years in succession over very extensive areas, in which case the entire coniferous wood or forest may be destroyed. Fatal results rarely follow in the case of broad-leaved trees. In either case, however, the loss may be enormous, as the collected data clearly show.

In the years 1853 to 1858, and up to 1863, immense damage was done by this moth—assisted in 1858 by attacks by bark-beetles—in East Prussia, Lithuania and Poland, and it was computed that no fewer than 7,000 square miles of forest were destroyed, and 6,427,500,000 cubic feet of timber were killed. This probably represents the worst attack on forests by insects ever recorded. In 1889-90 an attack in Bavaria involved an expenditure of £100,000 in combating it. Many cases have occurred in which the damage done, though on a smaller scale than the instances quoted, has nevertheless been perhaps equally serious in proportion to the area affected. A communication to the Board of Agriculture from the Foreign Office in 1891 stated that the Nun Moth has been known as periodically destructive in German, French, Russian, Swiss and Danish woods and forests since the fifteenth century.

The moths are very active, and in July and August the females deposit some 150 reddish-bronze eggs in groups of five to fifty in the bark of trees, and in moss and lichen growing on the trees a few feet above the ground. Immense numbers of eggs may be found on a single tree. In 1890 as many as 140,000 were found on a single large stem of Spruce in Bavaria, and an average of 5,000 per stem; while in 1891 a maximum of 200,000 was found on one stem. In the following April or May the eggs give rise to small caterpillars which grow rapidly, at first feeding in groups, and later ascending to the tree-tops. The caterpillars often spin extensive webbing over the tree tops. They pupate at the end of June and in July, the pupæ being attached to needles on low twigs, or in cracks and on undergrowth, by a few silken threads. In two to three weeks the moths appear, the males usually first, and perhaps in double the numbers of the females—doubtless in order to ensure fertilisation. Eggs are laid about three days after copulation, which takes place immediately the females emerge from the pupa cases.

The moths (see Coloured Supplement) have whitish forewings with several transverse zigzag or arched black lines, which have led to the name Black Arches Moth being applied to this insect. There is also a row of black spots along the end margin of the forewings. In the male the forewings are more thickly "arched" than in the female. The hind wings are light or silvery grey, with faint spots along the margin and a faint arched band. The abdomen of the female is pointed, and bears a series of reddish or rosy bands separated by black bands, both much fainter in the male, in which the end of the abdomen is tufted. The antennæ of the male are combed, and those of the female thread-like.

The caterpillars are at first yellowish, then grey and black, and they, after moulting, may be described as rosy-grey above and greenish-grey beneath, with a dark brown-grey irregular band along the back. Each segment bears six bluish warts with tufts of stiffish hairs. There are strong biting jaws, and the caterpillar possesses eight pairs of legs—one pair on each of the first three segments, one on the sixth, seventh, eighth and ninth segments, and one on the twelfth or last segment.

The pupa is short and stumpy, at first greenish in colour, but later changing to dark brown, chestnut or mahogany. It is shiny or lustrous, covered with pinkish, shaggy or dark hairs, and is enclosed in a very loose web of threads.

As regards preventive or remedial measures several means may be adopted. In the first place comes the collection and destruction of the egg clusters in autumn and winter, when they are pearly-grey in colour. This practice may be of great moment, as the total number of eggs laid on the trees is immense. Forstmeister Schulz (Bromberg) remarks‖ that at Stralsund in 1839-40 1,000 lb. weight of eggs, or 500 millions of individual eggs, were destroyed; while Schlich states that in the same year no fewer than ten tons of eggs were collected in the Bresenthal Forests, near Eberswald. The newly-hatched groups of caterpillars may also be destroyed. Trees may be grease-banded about 16 feet from the ground in March, before the eggs hatch, in order to prevent larvæ from climbing the trees. Larvæ collect above and below the sticky bands, and may be destroyed with a bristly besom. Caterpillars and pupæ may also be collected and destroyed from June onwards. In some cases where desirable infested trees may be sprayed with a poisonous spray with the object of destroying the larvæ. An important protective measure consists in avoiding pure woods of Scotch Pine or Spruce and planting suitable mixed woods instead. *H. C. Long.*

‖ *Mitt. d. deut. Landw. Gesell.*, August 13, 1910, p. 490



FIG. 163.—DOUGLASIA LÆVIGATA: FLOWERS PURPLISH-ROSE.
R.H.S. Award of Merit, April 1, 1913.

DOUGLASIA LÆVIGATA.

THIS pretty, dense-growing Alpine closely resembles the Androsaces. It is a native of the Oregon Mountains, North America, and grows freely in peaty loam in the conditions suitable for moorland plants. The flowers are a bright purplish-rose colour, set off by very small, glossy green leaves produced in dense rosettes. There are from three to seven flowers in each umbel, the individual blooms being about ⅜ inch in diameter, and marked by a small, red [illegible] which closes the tube. The whole plant is very dwarf; even the flower spikes scarcely exceed 2 inches in height.

FOREIGN CORRESPONDENCE.

LINUM CAMPANULATUM.

IN his interesting article on the "Distribution of Alpine Plants" (p. 208), M. Correvon mentions Linum campanulatum among the noteworthy plants of the Maritime Alps. This beautiful yellow Flax, of tufted habit, is a very suitable plant to introduce into rock gardens in sunny places, especially on limestone soil. It is by no means Alpine, and it is now decorating with its large pale yellow blossoms a limestone hillside about 150 ft. above the sea near Carqueiranne, in the Var.

Linum campanulatum has erect angular stems, 4 to 12 in. high, bearing a few elegant pale yellow blossoms 1¼ in. in diameter, with delicate orange-coloured veins. The petals are obovate, with long connate claw. The root-leaves are in a rosette, and are obovate-spathulate and glaucous; the stem-leaves are lanceolate-acute, green, with narrow transparent membranous edges. Unlike most Linums this one is good for gathering, for the flowers remain open several days in water. It continues to blossom in the Mediterranean region from April to June.

This species grows on dry hillsides and rocks in Provence, Languedoc, Rousillon, Dauphiné, and elsewhere in the south and south-east of France, and also in Spain, Italy and Dalmatia. It is very true that in the Maritime Alps are found "many endemic plants which are not found elsewhere except perhaps in the mountains of Liguria, Sardinia and Corsica"; but M. Correvon has, of course, taken a comprehensive view of the "Maritime Alps" in the paragraph alluded to. It reads as if all the plants named therein were endemic, but, evidently, that was not the writer's intention—e.g., Genista cinerea has a wide range elsewhere, including Spain and the Eastern Pyrenees. Dianthus furcatus, Alyssum halimifolium also are not quite peculiar to the Maritime Alps. Matthiola tristis, the second on M. Correvon's list of more or less endemic plants in the Maritime Alps, is widely spread in S.E. France, and it appears in other Mediterranean countries as far as Asia Minor and N. Africa. *H. S. Thompson. Var, France.*

The Week's Work.

PLANTS UNDER GLASS.

By F. JENNINGS, Gardener to the DUKE OF DEVONSHIRE, Chatsworth, Derbyshire.

COLEUS THYRSOIDEUS.—(See Coloured Supplement *Gard. Chron.*, June 22, 1912).—To obtain good flowering plants of this delightful blue-flowered Coleus in January and early February next, cuttings should be inserted now. Cuttings rooted very early in the season invariably produce spindly plants with long-drawn flower-spikes that require staking, and are not nearly so useful as strong, stocky plants with fine erect flower-spikes. Insert the cuttings either in pots or under a bell-glass in a compost containing plenty of sand. As soon as the shoots show signs of rooting, admit air gradually, to prevent them from growing tall and weak. As soon as they are well rooted, pot them singly in small 60-sized pots, and grow them on a shelf in a plant stove or warm house until they are established. At this stage they should be transferred to 4-inch pots and the roots soaked with water. Stand the pots as near to the roof-glass as possible, keep the house closed for a few days, and then pinch the leading shoots. For the final potting in 6-inch pots employ a mixture of rich loam and leaf-mould lightened and enriched with some coarse sand, a little peat, decayed cow manure and fine bones. The plants should be grown in a temperature of 60° to 65° at night. Do not allow the roots to suffer from want of water after they are re-established, and feed them freely with stimulants including liquid manure. Stand the plants close to the roof-glass and afford them plenty of air during the hottest part of the day. Well damp the spaces between the pots and also the bare places in the house late on sunny afternoons.

CHRYSANTHEMUMS.—As the time approaches for the final potting of all Chrysanthemums, it is advisable to have the ground on which the pots will be stood put in order, ready to receive them. It is an advantage to select a piece of ground, if it can be spared, that will accommodate the whole batch. Posts and wires will be required for tying the stakes; if the same ground has been previously used for this purpose, and the stakes and wire are intact, all that is necessary is to hoe the surface and cover it with a fresh sprinkling of ashes. Some sow broadcast salt and soot after the weeds are cleared off, and cover with another fine sprinkling of ashes; this practice is to be recommended. The pots required for the final potting should be washed; or, if labour is scarce, well rubbed out with a piece of cloth, and crocked ready for use. A good start with everything ready to hand on the day when potting is commenced will result in a great saving of time and trouble.

TREE-CARNATIONS.—As the season advances examine each specimen carefully with a view to removing all side-buds, and make the shoots secure to stakes, or whatever support is employed. Well fumigate the house. It is advisable to lower the blinds during the hottest part of the day. Young plants potted previously into 8½-inch pots should be watered with great care, and well syringed in the early mornings. Damp the paths of the house during the hottest part of the day, close the ventilators for almost an hour in the late afternoon, and well syringe the foliage whenever the weather is suitable for charging the atmosphere with moisture. Keep down attacks of insects by fumigation. Potting operations should be continued with haste, as the sooner the plants are put into their final receptacles the better. Plants that were placed in their flowering-pots early in May, and require pinching, should be at once attended to. Plants growing in benches must not be neglected. If weeds appear, stir the soil with a small Dutch hoe, as this will keep the ground sweet and porous, as well as destroying the weeds. Syringe the plants both night and morning, as advised for those in pots, and afford plenty of air to all established specimens. If young plants should flag during very bright weather, shade the glass for a couple of hours during the hottest part of the day.

DOUBLE GERMAN WALLFLOWERS.—Seeds of double German Wallflowers sown outside or in a cold frame at this time of the year will furnish good, strong plants for potting in the autumn. The seeds should be sown in the usual way, and when the seedlings are large enough they should be planted out on ground already prepared for their reception (preferably by the digging in of some decayed farmyard manure). A shallow trench or drill should be taken out with an ordinary hoe and filled with rough, unsifted leaf-mould. The plants should then be set in the leaf-mould, pressing the soil firmly around the roots. This will ensure the formation of a good ball of soil about the roots by the time they have to be lifted. In the autumn the plants should be potted in ordinary potting soil and placed in a cold house or frame. The plants may be started in the early spring—say in February—in a gentle heat, which should result in good, strong plants the following spring. It is not advisable to force the plants; the best results are obtained by growing them gradually.

PUBLIC PARKS AND GARDENS.

By SUPERINTENDENT.

TOWN PARKS AND GARDENS.—The management of public parks and gardens in the metropolis differs greatly from that of country parks. Where the impurities of the atmosphere have not to be constantly contended with almost any form of vegetation will succeed; but not so in London, where, be it grass, herbaceous or bedding plants, shrubs or trees, only such kinds as have been proved equal to withstanding the deleterious effects of an impure atmosphere can be employed. Thus of trees and shrubs we are limited to a few species that really do well, while it is a recognised fact that only certain kinds of grasses will succeed in the London area. Again, with bedding plants considerable discrimination is necessary that would never have to be taken into account when dealing with the country park or garden. Further, the soil in a town garden quickly deteriorates and requires not only replenishing, but treatment with lime in order that the chemical and other impurities may be neutralised. The country gardener finds it hard to believe that a real London fog will penetrate to the interior of the plant-house and cause in a single night every leaf to drop from certain bedding plants, or that from the same cause the hardy Wallflower cannot be wintered out-of-doors in the metropolis, and that therefore the annual supplies must be brought in each spring from the country. It is pitiable, too, to see the wholesale destruction of the foliage of certain alpine plants and native ferns after a couple of nights of a dense London fog—plants, too, that are unharmed by the severest winters. Chemical fumes from the gas, pottery and electric works of the metropolis also injure vegetation, and from this cause I have seen the young leaves of Elms, Catalpa and other trees blighted in a single night just as if seared by fire or subjected to several degrees of frost. So that, taking everything into consideration, town gardening is fraught with far greater risks to plant life than is the case in the country, while the responsibility of the gardener is correspondingly increased.

NEGLECTED SHRUBBERIES.—These are, unfortunately, too common in many public parks, gardens and squares. The monotonous repetition, too, of such shrubs as the Privet and Lilac is by no means a necessity, for there are others of far more ornamental appearance and equally enduring. In order that shrubberies may present a neat and tidy appearance, as well, indeed, as for the health of the occupants, the plants should be pruned and the border dug annually. Old shrubs, if pruned early in the spring, will soon send out fresh growths, whilst manuring and digging the soil not only benefits the plants but imparts to the shrubbery a well-kept appearance. The front lines of shrubs should be of smaller growth than those behind, while a band of herbaceous plants, say, 6 feet wide if space permits, always adds to the ornamental character of the shrubbery. An application of decayed vegetable matter or thoroughly decomposed manure will go far in sustaining a healthy growth of the occupants. Suitable shrubs for town planting are Olearia Haastii, Skimmia japonica, S. oblata, Colutea arborescens, the better varieties of Syringa and Philadelphus, Forsythia viridissima, F. suspensa, Stephanandra flexuosa and Hypericum proliferum.

THE KITCHEN GARDEN.

By JOHN DUNN, Foreman, Royal Gardens, Windsor.

SEAKALE.—Young plantations of Seakale intended for forcing next season are sufficiently advanced in growth to require attention. Each plant should be examined and the young growths reduced to one on each, so that good single crowns may be available for forcing. When this has been done loosen the soil between the rows with a hoe and, if the ground is dry, give the roots a liberal watering. As the season advances a dressing of soot may be given with advantage; the plants will require but little more beyond keeping the ground free from weeds, although it must be remembered that Seakale crowns force best after a damp season. Therefore, if dry weather prevails afford water liberally whilst the plants are growing freely.

VEGETABLE MARROWS.—Marrows planted early in the season should be watered frequently with weak liquid manure. Remove all worthless growths so that light and air may pass freely amongst the foliage. Make further plantations in the open garden, allowing 6 feet between the plants each way. In dry seasons it is preferable to plant on the flat rather than on mounds as the plants are not then so likely to suffer from drought.

ONIONS.—Autumn-sown Onions, which were transplanted in the spring, are swelling their bulbs, and may receive liberal dressings of artificial manure so that supplies may be available as quickly as possible. Stir the soil between the rows and remove weeds. Spring-sown Onions should be ready for thinning, but severe thinning should not be practised, as bulbs of a medium size keep longer and are quite as good for general purposes as larger ones. A dressing of soot may be applied with advantage during showery weather. Onions transplanted from boxes in the spring with the object of producing large bulbs should not be allowed to suffer from want of moisture at the root. If dry weather sets in the ground between the rows may be mulched with horse droppings.

LEEKS.—Young plants intended to fu ish supplies during the winter are ready for planting. The ground for this crop can scarcely be too rich, and for ordinary use the plants should be allowed a space of 1 foot each way between them. If the soil was trenched and manured last winter all that is necessary now is to break the surface with the points of a digging fork and draw deep drills at 1 foot apart. Set the plants carefully, using an ordinary dibber for the purpose. Only a small quantity of soil should be allowed to fall into the holes to cover the roots without making the stems tight when the plants begin to grow freely. The roots should receive liberal supplies of weak liquid manure from the farmyard. Leeks planted early in trenches should have the soil frequently stirred amongst them and be afforded liberal waterings to ensure a quick, clean growth.

CHICORY.—Make a sowing of this winter salad plant to ensure a supply of roots for forcing throughout the winter. Sow in drills at 15 inches apart and thin the plants to 9 inches apart as soon as they are large enough to handle. Hoe the soil between the rows on frequent occasions to promote a free growth and keep the ground free from weeds.

CAULIFLOWERS.—Afford liberal supplies of liquid manure to early-planted Cauliflowers, which should soon be ready for cutting. Sutton's Magnum Bonum planted in these gardens on April 3 is showing good white heads and will be ready to cut on June 4. Other varieties that will follow quickly are Walcheren and Early London. Make further plantations of the Early London variety for use in August. The ground

for this crop should be as rich as possible and the plants must never be allowed to become stunted for want of water.

THE HARDY FRUIT GARDEN.

By B. GOODACRE, Gardener to Sir ERNEST CASSEL, Moulton Paddocks, Newmarket.

THE THINNING OF ORCHARD FRUIT.—The thinning of fruits of orchard trees is much neglected, and especially in those establishments where labour is scarce. Yet it is just as important as the thinning of kitchen garden crops, or Peaches and Grapes under glass. It is bad practice to allow trees to carry to maturity all fruits that set, unless the crop is a moderate one, for not only are the fruits inferior if they are crowded, but also overcropping injures the tree. The grower is often tempted to leave too many orchard fruits on the trees, although a fair, average crop of clean, firm fruit is far more profitable. A fruit should, in every case, hang free from its neighbour, and where fruits set in trusses, only one, or never more than two specimens, should be allowed to remain. To consider first the Apple, the most important orchard fruit, and as a rule the most neglected. Many growers contend that careful thinning of this crop does not pay, but those who give thinning a fair trial will find the opposite the case. If the fruit is required for home consumption, it will be larger, cleaner, firmer, more appreciated, go further and keep longer; whilst for market purposes, it is always difficult to sell inferior fruits, some large, some small; and when sold the prices scarcely pay for picking and packing; whereas, well-grown, superior fruits of any variety always command a ready sale and a good price. Many varieties of large kitchen Apples, such as Warner's King, Annie Elizabeth, and Ecklinville Seedling, seldom set more fruit than the tree can bring to perfection; still, even these trees should be looked over and any twins or deformed fruits removed. Free-setting varieties, including Lane's Prince Albert, Keswick Codlin, and King of the Pippins, require much attention in thinning.

PLUMS.—It is not wise to thin Plums too hastily: a few of the fruits may be removed now, and the thinning completed after the stoning period is over. Trees of the best dessert varieties, such as Kirk's, Jefferson and Golden drop, should be gone over twice, finally leaving the fruits clear of each other and the bough. Varieties grown chiefly for culinary purposes, such as Magnum Bonum, Diamond, and Monarch, do not require much thinning, but sufficient space must be allowed for each fruit to swell to its full size. In the case of stone fruit, the present is a suitable time to thin out surplus spurs that are without fruit where they are becoming too numerous.

THE FLOWER GARDEN.

By EDWARD HARRISS, Gardener to Lady WANTAGE, Lockinge, Berkshire.

THE ROCK GARDEN.—During hot, dry weather plants on rockeries need to be watered frequently, and the watering should if possible be done late in the afternoon. As the spring-flowering plants become exhausted those which are not required for another season should be rooted out and their places furnished with summer-flowering subjects. Geum Mrs. Bradshaw may be planted both for spring and summer flowering. Some of the flower-pods of this beautiful Geum should be left to mature seed, which should be sown as soon as it is ripe, to produce plants for next season. The seeds should be sown in boxes filled with fine soil and placed in a cold frame, where they will germinate readily. Certain of the spring-flowering plants may be retained for another season, especially the choice kinds of Aubrietia, but they must be clipped well back. Cuttings of the Double Arabis should be inserted if this work has not been done already. Remove weeds and dead flowers, and restrict strong-growing plants, or they may smother their weaker neighbours. It is a good practice to sprinkle fine soil amongst the plants as the roots are always near to the surface. Certain varieties of annuals may be utilised in the rock garden. The Swan River Daisy (Brachycome iberidifolia) is a good plant for the rockery and continues in flower for the greater part of the summer. Phacelia campanularia, Dwarf Nasturtiums, Nemesia, Eschscholtzia, Dianthus, Linum and Candytuft are other annuals that may be used for this purpose.

WATERING.—In the event of a long period of drought hardy herbaceous plants will require not only plenty of clear water but some stimulant in addition, especially if the border was not well manured in the autumn or spring. Well-seasoned soot is useful, for not only is it an excellent fertiliser, but it also acts as a check to many kinds of insect pests. Beds of Phloxes, Delphiniums, Spiræas, Pentstemons and Pyrethrums require an abundance of water in times of dry weather, and where practicable such beds should be top-dressed with short dung. The hoe should be used frequently to stir the soil especially after water is applied. Attend regularly to the watering of trees and shrubs which were planted late and mulch the roots with manure if this has not been done already. Seeds of spring bedding plants must be sprinkled every evening until the seedlings are well through the ground.

ROSES.—Syringe Roses with an insecticide at least once a week to keep aphis in check, and place a little sulphur in the specific as a preventive of mildew. Guard against the small grub which conceals itself in the points of the shoots and damages the buds. Roses which have been planted recently should be mulched with short manure. If the hot, dry weather appears likely to continue mulch all the plants at once.

GENERAL WORK.—The staking of herbaceous plants must be attended to as the case demands, and when carrying out the work take the opportunity to thin the shoots where they are crowded, for the best effect of many species is often spoilt from this cause. During the process of bedding out many flower-pots are often broken through neglecting to gather and store them at once in proper places.

THE ORCHID HOUSES.

By W. H. WHITE, Grower to Sir TREVOR LAWRENCE, Bart., Burford, Dorking.

SOPHRONITIS HYBRIDS.—Where a fairly representative collection of these hybrids are grown some of the plants are in bloom during the greater part of the year. The best varieties include Sophro-Cattleya Chamberlainiana, S. C. Warnhamensis, S. C. Doris, S. C. Blackii, S. C. Calypso, S. C. Saxa, S. C. Thwaitesii, S. C. eximia, S. C. Westfieldensis, S. C. Lotte Müller, S. C. Antiochus, Sophro-Lælia Orpetiana, S. L. Gratrixiæ, S. L. lœta, S. L. Marriottiana, S. L. Psyche, S. L. Heatonensis, S. L. Phroso and S. L. Valda. In addition to these there are several beautiful hybrids obtained by crossing Sophronitis grandiflora and Lælio-Cattleyas—namely, S. L. C. Danæ, S. L. C. Veitchii and its richly-coloured variety Eros; S. L. C. Marathon, S. L. C. Olive, S. L. C. Medea, S. L. C. Goodsonii, S. L. C. bletchleyflora, S. L. C. de Vere Beauclerck, S. L. C. Miss Edith d'Abre, S. L. C. Jeanette and several others. As many of these plants are commencing to grow and sending out new roots, the present is a good time to undertake their re-potting, overhaul them, and to re-pot should this be necessary. The more beautiful and rarer varieties may be divided and the leading pieces potted separately. In re-potting it is not advisable to include all the back pseudo-bulbs, three growths behind each leading shoot being sufficient; should there be only four pseudo-bulbs the rhizome may be partially severed between the second and third shoot. The back portion, if the eyes are sound, will soon form another growth, which will increase the stock at the next potting. Where it becomes necessary to sever the back pseudo-bulbs at once in order to get the leading part into a pot of a suitable size the back pieces may be placed in other pots filled with small crocks, or they may be packed firmly with Sphagnum-moss and re-potted immediately growth commences and new roots appear. The pots for these Sophronitis hybrids should be of a moderate size. They should be filled to about half their depth with clean crocks, and then a compost of Osmunda and A1 fibres should be added, both materials being cut up moderately small and well mixed together. Previous to using the Osmunda fibre the mossy substance that adheres to it should be removed; this detail is important as if the dead moss is used it binds the compost so closely together as to prevent water from passing freely through it, besides causing the fibre to decay soon. In re-potting do not press the materials down towards the drainage, but press them firmly inwards towards the rhizome of the plant and finish off at the edge of the pot. For several weeks after re-potting I make it a practice to keep the plants well on the dry side, affording only a very moderate quantity of water, merely moistening the outer edge of the compost till the growths and roots are active. As plants become established the supply of moisture is increased gradually. After repeated trials I find that these plants grow best in a light, airy position in the intermediate house the whole year round; but such plants as S. C. eximia, S. L. Gratrixiæ, and a few others which send up their flowers in conjunction with the young growths generally during the colder season of the year, should be removed to a warmer position in the Cattleya house from the time the flower-buds appear till the blooms are fully expanded. The plants may be suspended well up to the roof-glass or they may be elevated upon stands in a light position.

FRUITS UNDER GLASS.

By JAMES WHYTOCK, Gardener to the Duke of BUCCLEUCH, Dalkeith Palace, Midlothian.

STRAWBERRIES.—The later batches of forced Strawberries will do best at this stage in comparatively cool houses or frames. Rather than stand the pots on shelves in forcing houses, let them be planted in, or stood upon, some material that will hold moisture, as this will benefit the plants and save a considerable amount of labour in watering. The pots are filled with roots, and weak doses of some fertiliser in solution should be afforded each time moisture is required. But the use of stimulants must be discontinued when the berries are ripening, and at that stage clear water only should be used. Syringe the foliage twice daily, and promote atmospheric moisture by damping the paths and bare spaces in the house to prevent red spider increasing. Plants bearing ripe Strawberries may be removed to cold frames where they may be afforded plenty of air, as this will cause the berries to develop a high colour, and become better flavoured: less water is required at this stage. By the middle of June runners should be layered to furnish plants for early forcing next year. The best runners for the purpose are those from young plants that were planted expressly for the purpose last autumn. The flowers should be removed from these stock plants so that all their energies may be devoted to the production of strong runners. In hot, dry weather, mulch the plants with a layer of dung, and well water the roots. The runners may be layered in 3-inch pots, filled with a mixture of loam and horse manure, or a concentrated fertiliser. Make the soil fairly firm, and plunge the pots between the rows, pressing a strong runner into each pot, and holding it in position with a stone or peg. Let the pots be watered each evening, and, when they are well filled with roots, sever the runners from the parent plants, and repot into the fruiting pots, using a mixture of fresh loam and artificial fertiliser; as on the first occasion, let the potting be done very firmly.

PEACHES.—The fruits having been gathered from the earliest forced trees, the branches which bore the fruit should be cut out, also any others that are not required, as this will benefit those that remain. Should red spider have obtained a hold on the foliage during the time when the atmosphere was kept dry to assist the fruits to ripen, the trees should be syringed frequently with an insecticide, and the foliage wetted daily with clear water. If the borders are in need of moisture they should be soaked with clear water only.

SUCCESSIONAL PEACHES.—As the fruits approach the ripening stage they should be exposed to the sunlight, and the house kept dry, affording plenty of fresh air. The border may require watering, but if the soil is of a heavy, damp-holding nature, it will be better to defer the watering until after the fruits are gathered. In the case of light, porous soils, give the roots sufficient water to last until the fruits are gathered.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher. — *Our Correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the* PUBLISHER; *and that all communications intended for publication, or referring to the Literary department, and all plants to be named, should be directed to the* EDITORS. *The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.*

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS, 41, Wellington Street, Covent Garden, London.** *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

Special Notice to Correspondents. — *The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

Illustrations.—*The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.*

Local News.—*Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, JUNE 9—
United Hort. Ben. and Prov. Soc. meet.

WEDNESDAY, JUNE 11—
Birmingham Botanical and Hort. Soc. Orchid Show.

FRIDAY, JUNE 13—
Nat. Hardy Plant Soc. Ex. at R.H.S. Hall.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich—58.2°.

ACTUAL TEMPERATURES:—
LONDON.—*Wednesday, June* 4 (6 p.m.). Max. 70° Min. 57°.
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday, June* 5 (10 a.m.); Bar. 29.5. Temp. 68°.
Weather—Bright Sunshine.
PROVINCES.—*Wednesday, June* 4.—Max. 68° England, S.E.; Min. 56°, Valencia.

SALES FOR THE ENSUING WEEK.

WEDNESDAY NEXT—
Hardy Bulbs and Tubers, at 1.30; Palms and Plants, at 5. By Protheroe and Morris. At 67 and 68, Cheapside.

THURSDAY NEXT—
Clearance Sale of Bedding Plants, Greenhouses, etc., at 12. By Protheroe and Morris. At 6, Ashby Road, Islington, N.

Flour Paste as an Insecticide.

Recent experiments made by Mr. W. B. Parker* indicate that a useful insecticide for Hop aphis and other small aphides is provided by the very homely substance, flour-paste.

Mr. Parker commenced his experiments with the view to discovering an effective "spreader" for lime-sulphur solutions. Soap is not a suitable substance to mix with lime-sulphur, owing to the fact that it forms with the latter a precipitate of calcium polysulphide. Mr. Volck, of the Californian Experiment Station, had already observed that a mixture of flowers of sulphur (15lbs.), water (100 gallons), and flour-paste (four gallons) is an admirable destroyer of red-spider, and Mr. Parker, whilst using this mixture, observed that it spreads over foliage very readily.

Accordingly a trial was given of flour-paste lime-sulphur mixture as an insecticide of red-spider on Hops. As the result of various experiments, it was found that four pounds of flour made into four gallons of paste and mixed with 100 gallons of lime-sulphur is effective in destroying this pest. How efficient is this mixture may be seen from a comparison of the results obtained with lime-sulphur alone and with lime-sulphur plus flour-paste. The former was found by Mr. Parker to destroy only 37 per cent. of the red-spider, whereas the latter killed 99 per cent.

The remarkable increase of efficiency was shown to be due to the spreading effect of the paste. Needless to say, the spreader is both convenient and cheap, and should prove of great value to users of lime-sulphur.

Further experiments with flour-paste mixed with nicotine sulphate showed that a similar beneficial result is produced, and that a mixture of nicotine sulphate (1—2,000) with flour-paste (1—400) sufficed to exterminate aphis.

An illustration of a Hop leaf which accompanies the information shows how remarkable is the effect of the paste in bringing about an even and thorough spreading of the insecticide over the sprayed surface.

Inasmuch as when flour-paste is used, many of the smaller aphides are seen to be stuck to the leaves, Mr. Parker proceeded to try the effect of flour-paste alone. He found that this substance, when used in strength of 8—100, is capable of destroying red-spider on Hops; and he believes that it will prove equally effective as an insecticide in the case of any small leaf-feeding mites.

Unfortunately the stouter aphides refuse to be glued down by the paste; nor does it serve to destroy the eggs. Wherefore it would appear that the best results will be obtained if the paste is used with some such insecticide as those named already.

The paste has no ill-effects on the foliage, but dries after a time, cracks, and peels off, leaving the foliage free to carry on its work. A great advantage possessed by flour-paste is that when it is used alone it does no damage, even to delicate structures, such as flowers. It has been used with complete success as an insecticide for red-spider on the following plants: Beans, Chrysanthemums (the leaves of which may, however, be spotted if the paste is used too near the blooming time), Cucumbers, Pear, Rose, and Violets. The method recommended by Mr. Parker for the preparation of the flour-paste is as follows:—Mix cheap Wheat-flour with cold water, make a thin paste without lumps; or wash the flour through a wire screen with a stream of cold water. Add water till a gallon of the paste contains one pound of flour. Heat until a paste is formed, stirring constantly to prevent caking or burning, and add water to make up to the original volume.

If used with another insecticide, it must be kept stirred, or the paste may settle.

It is to be hoped that gardeners will give a trial to this very simple insecticide, and that they will report the results of their experiments.

* United States Bureau of Entomology *Circular* No. 166.

Apple Breeding in Canada.

An interesting article on Apple breeding is contributed by Mr. W. T. Macoun, Government Horticulturist, Ottawa, to the *Proceedings of the American Breeders' Association.** After describing the work of pioneers, Mr. Macoun deals with the experiments of Dr. Saunders, who in his first hybridisations used the Berried Crab, Pyrus baccata, as the female parent. The choice was determined by the fact that specimens of P. baccata obtained from Russia had proved hardy in several of the colder districts of Manitoba and Saskatchewan. In later experiments other wild crabs, Pyrus prunifolia, and the wild apple of Europe, P. Malus, were used. The pollen used for these crosses was taken from some of the best Canadian cultivated sorts. In the seedlings of the first generation of the P. baccata crosses the crab characters are very apparent. Success being slow in coming, Mr. Macoun proceeded by way of selection, sowing chance seed from the fruits of the Experimental Farm orchard in the expectation that natural crossing would lead to a desirable combination of characters. Good results have followed from this somewhat empirical method, and of 1,000 varieties obtained in this way some 200 are promising enough to be worth propagating. Mr. Macoun records observations to show that the seedlings tend to resemble the female parent in colour of fruit and keeping quality; but it is by no means certain that this tendency is not traceable to self-fertilisation. One of the main objects of these experiments is to raise apples suitable for the prairie provinces of Canada, and there seems to be no doubt but that the result will be achieved. At the same time, and without venturing to offer advice, it may be observed that the speedy securing of the desired result is more likely to come from a very extensive growing of the second generation of a well-chosen cross than by following the "turning up" method. It is within the knowledge of the present writer that hardiness depends not on a single factor, but upon a number of factors, and therefore, since the first generation plants are worthless because of the small sizes of their fruits, a very large number of seedlings from selfed or inter-crossed plants of that generation must be raised if the expectation of joining hardiness and edibility is to be fulfilled.

* Vol. VIII.

FREAM MEMORIAL PRIZE.—The Board of Agriculture and Fisheries have awarded a Fream Memorial Prize of the value of £7 1s. 8d. to Mr. THOMAS BEATON MANSON, a student of the West of Scotland Agricultural College, Glasgow, who obtained the highest marks in the recent examination for the National Diploma in Agriculture.



THE NUN MOTH (Liparis monacha, Linné)

Smaller Male insect above; Female on left; Caterpillar on needles; Cocoon on point of smaller twig. (All natural size)

Royal Counties Show.—The Royal Counties Agricultural Show will be held at Windsor from June 10 to June 13. A larger tent than usual is to be provided for the horticultural exhibits in anticipation of an increased number of competitors. Particulars may be obtained from Mr. C. S. Fuidge, Southampton, who has charge of the horticultural section.

Mr. A. C. Smith.—Mr. A. C. Smith, assistant superintendent at the Royal Horticultural Society's Gardens, Wisley, is relinquishing his appointment to take up the duties of Steward of the Hatchford Park estate belonging to Sir Henry B. Samuelson, Bart. Mr. Smith has been at Wisley for nearly six years, having previously filled the post of gardener at Lyndhurst, near Haywards Heath. During the time Mr. Smith has been at Wisley he has enjoyed the friendship of a large number of the Fellows. We wish him every success in his new post.

Sale of Books.—At a recent sale of books conducted at the Marchmont House (Duns), Mrs. Blackwell's *Herbal* realised 10 guineas; Parkinson's *Theatrum Botanicum* 2½ guineas; and *Paradisus* £20. Gerard's *Herbal*, 3rd edition, and several other rare gardening books were also well sold. Some forty representatives of London booksellers were at the sale; the library contained many valuable books, of which there were in all about 8,000. The house and estate is rich in historical associations, and situated in one of the most charming parts of Berwickshire.

Retirement of Mr. J. C. Gould.—Mr. Jno. C. Gould, who has been associated with the firms of John Sharpe, John and Charles Sharpe, and Charles Sharpe & Co., Ltd., for the past 64 years, is retiring from active work in the management of the business, of which he is a member of the board of directors.

Bicentenary of the St. Petersburg Botanic Garden.—The Imperial Botanic Garden at St. Petersburg was founded in the year 1713, by Peter the Great, and is this year celebrating its bicentenary. The fête will probably be held between the 21st and 25th inst., but the exact date is not yet decided. The festivities will last for two days. On the first day a presentation of medals and diplomas inaugurated in honour of the occasion will take place; and the second day will be devoted to a tour of the gardens.

Impure Sulphate of Copper.—The Board of Agriculture warns those who use "blue vitriol" of the importance of securing pure copper sulphate. The Board continue to receive evidence that impure copper sulphate is sold freely to persons who desire to purchase blue vitriol, the most common adulterant being [illegible] artificially coloured to resemble copper sulphate. An inspector of the Board recently purchased samples of "blue vitriol for wheat dressing," which, upon analysis, showed an average content of 12.5 per cent. of blue vitriol only, the remainder of the substance being green vitriol coloured with Prussian blue. It should be borne in mind that the value of the material sold in these cases is in proportion to the amount of sulphate of copper present, and iron sulphate can only be regarded as an adulterant. It is advisable, therefore, in obtaining sulphate of copper to demand from the seller a guarantee of 98 per cent. purity, and to avoid purchasing the article sold as "agricultural" sulphate of copper. The presence of iron in copper sulphate may be determined readily by dissolving a small amount in water and adding ammonia, the solution being constantly stirred till a deep blue liquid is formed. Any quantity of brown flocks floating in this blue liquid indicates the presence of so much iron that the copper sulphate should be subjected to a proper analysis before use.

Camphor for Snails.—According to the *American Florist*, a grower who was much troubled with snails sought the advice of a [illegible] friend, who recommended the use of the camphor or moth balls [illegible] preserving clothes from moths during the summer. These balls were placed on the [illegible] about 12 inches [illegible] It is stated that for the past [illegible]



Fig. 164.—Collection of orchids exhibited by Messrs. Armstrong and Brown at the Chelsea Show.
(See Report in Issue for May 24, p. 350.)

months the garden has been untroubled by the pests.

ROYAL GARDENERS' ORPHAN FUND.—Among the special sums contributed recently to the Royal Gardeners' Orphan Fund is £5 6s., forwarded by Messrs. GEORGE BUNYARD AND CO., LTD., being the amount received by them for naming fruit for unknown correspondents.

"LIVRE D'OR DU MONDE HORTICOLE."—We have received from M. LOUIS GENTIL, the editor of *La Tribune Horticole*, Brussels, a copy of the *Livre d'Or*, or "Golden Book" of Horticulture. The book is a souvenir of the Ghent Quinquennial Exhibition of this year, and will have a permanent value for all who are interested in horticultural enterprise. The greater part of the book consists of a series of excellently reproduced portraits of all the chief horticulturists, British, Continental and American. These are followed by some twenty pages of photographs, etc., of a somewhat melancholy interest, of horticulturists who now live only in their work and in the memories of their friends. After this several miscellaneous portraits follow, among them some groups of varying interest. Two of the latter, showing the organisers of the quinquennials of 1903 and 1908 respectively, will later on be of historic value and will add greatly to the worth of the book. A useful alphabetical list of the horticulturists whose portraits are reproduced completes the volume. This will be found very handy for reference, especially as regards the foreign representatives. A fine portrait of M. GEORGES HELLEPUTTE provides a frontispiece. M. HELLEPUTTE, it will be recalled, is the Belgian Minister of Agriculture, who has done a great deal for horticulture in Belgium, and was the originator of the Horticultural Committee (a department of the Ministry of Agriculture). It is to be regretted that by an accident to the press while the volume was being printed several of the portraits were completely spoiled and could not appear. From a book of this nature we can ill spare such names as those of Sir GEO. HOLFORD, M. D. BOIS, and Herr AUGUST SIEBERT. Apart from this accident the book fully justifies the pains and care which have been bestowed upon it, and we are pleased to be able to congratulate our colleague, M. LOUIS GENTIL, upon the enterprise and talent which have produced so interesting and valuable a souvenir.

FRUIT FARMING IN CANADA.—Probably 75 per cent. of people who go from Great Britain to Ontario go with the idea of taking up fruit farming. This year there has been a vast influx of people into the Niagara and other fruit districts of the Province, either to work on farms or to take up their own land. Fruit growing in Ontario is a very important industry. The total orchard and vineyard acreage in 1911 was 294,675 acres; vineyards, 11,586 acres. The principal Apples exported are: Early varieties: St. Lawrence and Duchess; winter varieties: Northern Spies, Greenings, King, Russet, Snow, Baldwin, Ben Davis and Tolman Sweet. Peaches and Grapes are the principal fruits grown in Niagara District. Pears for export are also grown. Only Peaches, Apples and Pears are exported to Great Britain. The Western markets for Ontario tender fruits are of increasing importance. In 1912, 7,000 cases of Ontario Peaches were shipped to Great Britain and sold at wholesale prices, varying from 3s. to 6s., according to condition on arrival. An experimental fruit farm has been established in Niagara District with the object of developing varieties suitable for long shipment. Over 30 co-operative fruit growers' associations carry on a most profitable work in producing, packing and marketing fruits.

A SIMPLE GERMINATOR.—An ingenious and simple apparatus for germinating plants which require heat is described in *Die Gartenwelt* (May 24, 1913), and should prove useful to those who lack a heated greenhouse. The apparatus consists of a large inverted pot standing on three blocks so as to provide air, and thus to keep burning a night-light placed inside the inverted pot. Standing upright on the latter is another similar pot, the bottom of which has been broken away so as to leave a small circular ledge. Resting on this ledge is an inverted pot of smaller size. Sphagnum-moss is packed round the small inverted pot to an inch or so above its level. A layer of fine sand of 2 inches or so in thickness is placed over the Sphagnum, and the seeds are sown in the sand. The top of the germinator is covered with a glass plate.

ON TERMINOLOGICAL EXACTITUDE.—We desire to offer a friendly protest against the misuse of abbreviations of plant names. Our contemporary, *South African Gardening*, in illustrating a prize-winning bloom, labels it a Chrysanth, although it heads its article on the subject in the more normal way. It is easy to introduce such abbreviations, difficult to get rid of them, and although convenience may at times seem to justify the practice, it is evident that the practice may lead to utter confusion. Wise men are always pedants in matters of terminology, for they know that it is better to bear the ills we have than to fly to others that we know not of. On a yet more dreadful abbreviation for the Chrysanthemum used by some journals we are mum.

DANGERS OF THE ELM.—Because of its propensity for occasionally, suddenly and without the slightest warning shedding large branches, even when the air is still, the common English Elm (*Ulmus campestris*) is a somewhat dangerous tree. Thus, only last week there was a distressing fatality in South London, a large branch falling on a man in the high road, killing him instantly, and also injuring a horse. In this case the occupier of a house near by had only recently asked that the Elm should be inspected by an expert, which had been done. Expert supervision should be a safeguard of a kind, but, seeing that only a few years ago a distressing fatality occurred at so well-regulated a place as Hampton Court, it cannot be claimed that it is a complete one. The case against the Elm is fancifully expressed by that great observer, RICHARD JEFFERIES, in *Wood Magic*, as follows: "And Elms are so patient, they will wait sixty or seventy years to do somebody an injury; if they cannot get a branch ready to fall, they will let the rain in at a knot hole, and so make it rotten inside, though it looks green without, or ask some fungus to come up and grow there, and so get the bough ready for them. That Elm across there is quite rotten inside—there is a hole inside so big you could stand up and yet if anybody went by they would say what a splendid tree." LOUDON, who may always be consulted with advantage on such matters, says: "The Elm is not a brittle tree, and, from the straightness and strength of its trunk in proportion to its head, it is not liable to be injured by high winds. It is, however, subject to many diseases, and is very liable to be attacked by insects." It has been stated that branches are more liable to fall in dead, calm, foggy weather, when the air is laden with moisture, than in high winds, and that in some cases on examination neither flaw nor decay can be detected in the timber. Certainly the common Elm should not be planted close to houses, or in much frequented places. Rather curiously it does not appear to be common knowledge that the Scotch or Wych Elm is far less treacherous, if, indeed, it is not practically free from this defect. *Field.*

CROP PROSPECTS IN FRANCE.—According to the *Board of Trade Journal*, H.M. Consul-General at Marseilles (Mr. M. C. GURNEY, M.V.O.), reports that on May 1 the general agricultural situation in the Marseilles district ha improved, the rains which occurred in the latt part of April having been most beneficial t cereals and other crops. Unfortunately, shar frosts caused considerable damage to the vin yards, fruit and almond trees, in the neighbou hood of Aix and Marseilles, and in the Héraul valley. The wheat crop in this last district ha also suffered, a large proportion of the youn shoots having been destroyed. In the Vaucluse however, the effects of the cold have not bee so considerable. Fruit trees have suffered th most, but the vineyards were not much damaged the growth being backward at the time. Cereal are well advanced, and promise favourably. I the Basses-Alpes the result of the frost has bee disastrous, cereals suffering so severely tha their growth has almost entirely ceased. Th vineyards, however, have escaped in some parts and less damage has been done than might hav been expected. The fruit crop is practically ruined, and except in the case of Apple trees which had not then blossomed, and a few lat flowering Pear trees, there will be no fruit thi year in that district. In the Gard, on the othe hand, prospects are much more favourable, and although orchards and vineyards have suffered some damage, this has now been found muc less serious than was at first feared. The leaves of the young Potato plants have been frozen i many places. Generally speaking, the prospects are not unfavourable; a good hay crop is expected.

MANURING OF CARROTS.—From the results o experiments in the manuring of carrots carried out by Mr. E. E. STOKES, at the Midland Agricultural College, the following conclusions are drawn:—If the soil be deficient in lime apply 10 cwt. of quicklime to the acre, sown with a distributor early in the year, or 30 cwt. of lump lime slaked in small heaps in the field and spread with the shovel on top of the furrow and worked in later—not ploughed in. Farmyard manure is best applied to the previous crop. Salt is beneficial, but not more than 2 cwt. per acre may be applied with safety to a young growing crop. Potash is absolutely necessary. Apply as sulphate at time of planting, or as an early top-dressing. Or use kainit—5 cwt. per acre worked into the land some time before planting. Phosphates should always be applied, and if farmyard manure is not given nitrogen in some form must be given.

THE CORN CROPS.—The May *Bulletin* of the International Institute of Agriculture, just published, gives data concerning the areas sown under cereal crops in the most important countries. These crops as a whole are in good condition and have only suffered very slight damage from the frosts which occurred almost everywhere in Europe during the month of April. These same frosts caused very little damage to the vines in Spain and Italy, whilst the vines in Hungary seem to have suffered considerably.

THE ICE BOX METHOD OF KEEPING FRUIT TREE BUDS.—Mr. G. HALE HARRISON gives in the *National Nurseryman* for May, 1913, an interesting account of the methods adopted by the HARRISON NURSERIES, Berlin, Maryland, for keeping the scions of fruit trees to be used for budding. The old method of keeping the sticks in water till they are required has been discarded owing to the fact that the shoots tend to become water-logged and the buds damaged in consequence. In the new method advocated by Mr. HARRISON the bud sticks are cut, sprinkled with water and put in a cool, sheltered place. The leaves are then cut off with a sharp knife, but about a quarter-of-an-inch of the leaf-stalk is left as a protection to the eye. All but the well-ripened part of the bud stick is also cut off. The scions are placed in a box in the sun to dry, and they are then fumigated in special air-tight boxes to free them from insect pests.

The fumigation box is 4 feet long, 2 feet wide, and 2½ feet high, and fumigation is carried out by means of hydrogen cyanide liberated from fused potassium cyanide by the action of sulphuric acid. The potassium cyanide is of 98—99 per cent. purity, and the sulphuric acid of 1.83 sp. gr. 0.05-0.1 grams of cyanide of potassium per cubic foot of air space are employed. After fumigation the buds are taken from the box, sprinkled with water and wrapped in bundles in wet sacks. Mr. HARRISON insists that the buds must be damped and cooled quickly. They are put into an ice box containing 700 lbs. of ice, and remain therein from 1-12 or more hours. Though the bud sticks plump up whilst in the ice box, there is no danger of their becoming water-logged, and it is important to observe that the lower the temperature the better the result. The buds may be kept in the ice box for a week or more without sustaining damage. The ice box is 5 feet long, 3 feet wide, and 3 feet deep, and is, of course, insulated (by sawdust, etc., between double boards) to reduce loss of heat by radiation. The box is carried on a truck from one batch of seedlings to another. To give an idea of the success of the method, Mr. HARRISON mentions the following facts. In 1910, 3½ million Peach trees budded by his firm produced about 500,000 saleable trees. The ice box method was then devised by Mr. HARRISON, and applied first to buds for Bartlett Pears. It was found that far more took, and also that they united more quickly than was the case by the old method. Since 1911 all the budding of Peach, Apple, Pear, Plum and Cherry has been done by the new method.

TEUCRIUM HIRCANICUM.—Mr. A. PURPUS draws attention in *Möller's Deutsche Gärten Zeitung* (May 24), to the promise which is displayed by the North Persian and Caucasian labiate Teucrium hircanicum. Although somewhat pale in colour, bluish- or purple-red, its inflorescences attain to upwards of 2 feet in length, and the flowers occur for fully a foot along the inflorescence. The lower leaves are heart-shaped, the upper ones more elongated, and the blossoms last from the end of July to September. Teucrium hircanicum is readily raised from seed, and, indeed, propagates itself by self-sowing. It requires a sunny, dry situation.

MANURING OF CABBAGE.—From experiments carried out by Mr. E. E. STOKES at the Midland Agricultural College, Kingston-on-Soar, the following manures are recommended for Cabbage grown in average soil with farmyard manure :—Per acre : 4 cwt. of kainit well worked into the land before planting or ridging up ; and on light soils 2 cwt. of salt applied in the same way, and in addition to the kainit. Not less than 3 cwt. of superphosphate should be used at planting time, and in cases in which no or little dung is used, 1 cwt. of sulphate of ammonia should be mixed with the superphosphate. There should also be given 1½ cwt. of nitrate of soda mixed with an equal amount of common salt, and applied in one, or preferably two, top dressings. If applied in two lots the second should follow the first after an interval of 6 to 8 weeks. The cost of the above artificials works out at 56s. per acre with, and 41s. without, the sulphate of ammonia. From tables given in the report the increase of yield produced by the addition of these artificials to the dung (20 tons per acre) may amount to so much as 6 or 7 tons to the acre.

THE WALNUT.—*Bulletin* No. 231 of the Agricultural Department of the University of California is a volume of nearly 300 pages devoted to Walnut cultivation in California. The *Bulletin* is remarkable, not only for the value of its contents, but also for the fact that it constitutes a monograph of a new and important kind, namely, a strictly horticultural monograph. Everyone interested in the cultivation of this plant should procure and peruse the *Bulletin*, which opens with an admirable account of the species of Juglans, and of the hybrids produced by the natural and artificial crossing of the English Walnut, Juglans regia, with Juglans nigra, the American Black Walnut. From this section of the report, we learn that natural crossing has led to an enormous number of self-sown hybrids which occur wherever the English and Black Walnut are grown in proximity with one another. Of this type is the Paradox, obtained by Mr. BURBANK. Generally speaking, the hybrids make rapid growth, but do not seed freely. The description of species and hybrids is followed by a section devoted to Walnut culture in California, in which methods of propagation are dealt with in detail. Then follows an account of commercial varieties, and the *Bulletin* concludes with a description of the diseases which affect the plant, and of the methods employed to combat the diseases. The pest which gives rise to Walnut blight or bacteriosis has been investigated with thoroughness, and has been proved to be a bacterium. This disease occurs in the young, tender parts of the tree, and is characterised by blackish areas. It is not certain whether bacteriosis occurs in Europe, though there is some evidence that it does.

A VALUABLE COMMERCIAL PLANT.—An official report recently received at the Foreign Office on the trade of the Cape Verde Islands, by Captain A. T. TAYLOR, R.N., H.M. Consul, contains the following item :—"Purgueira (Jatropha curcas), hitherto wrongly described as the Castor-oil plant, grows wild over all the islands, but especially in St. Jago and Fogo. Its seeds contain an oil useful for illumination, and the ashes of the husks, which are said to be very rich in potash, and hence useful for soap-making, are the chief article of exportation from these islands. There is an export duty on it of 3 reis a kilo. for Portuguese ports and 6 reis for foreign ports. The value of this shrub to the province is considerable. It requires no care in cultivation, and is hardy enough to withstand the drought and strong winds of these islands. The Government has from time to time made large plantations of it in order to serve the double purpose of afforesting the sterile lands near the sea and on the hills, and to increase the output of seeds. But in spite of regulations the ravages of cattle, goats in particular, and of natives in search of fuel, have hitherto retarded its expansion. The output of seed is now, however, increasing, and the result of better attention to the causes of destruction of the shrubs should result in steady progress. Some of this produce goes to Marseilles, but the greater part to Lisbon."

CROWN GALL.—The conclusions reached by Dr. ERWIN SMITH, that Crown Gall is due to a bacterium (Bacterium tumefaciens), and that the disease may be induced in a large number of different kinds of plants by inoculating them with cultures of this bacterium, has led to a considerable amount of further investigation of this disease on the part of American horticulturists. The prime object of such investigation is to discover some means of preventing this serious plant-disease ; nor is it surprising that so much energy should be expended in this direction, for according to the statement of Mr. CLAYTON O. SMITH (*Bull.* 235, Agricul. Exp. Station, Univ. of California) it is a cause of heavy losses among orchards in different parts of America. Thus in California, it is estimated that in some years 75 per cent. of Peach trees suffer from crown gall. The large swellings which are symptomatic of the diseased condition are so well known as to require no further description (see *Gardeners' Chronicle*, May 20, 1911). They are to be met with on a large number of plants, and, as shown by Mr. SMITH, the disease may be induced in healthy plants by inoculation with pure cultures of B. tumefaciens. Of the fruit trees which have thus proved susceptible, Mr. SMITH mentions several varieties of Peach, Prunus Davidiana, Almond, Apricot, various Plums and Cherries, Walnut, French Pear stock, Wild Pear, Apple, Quince, Muscat Grapes, etc. Comparatively few plants appear to resist the inoculation, but of the number mention is made of the German Prune, Prunus ilicifolia, and certain other trees, such as Avocado and Olive. The object of these experiments, which are being continued, is to discover what stocks, if any, possess a natural immunity from this widespread and serious disease.

THE R.H.S. AND NEW PLANTS.—"By way of supplementing your article of last week," writes a correspondent, "the following narrative may be worth placing on record. A new plant was put before the R.H.S. Floral Committee at the Chelsea Show. This was Meconopsis Delavayi from the Royal Botanic Garden, Edinburgh, and at the same time a message was conveyed to the committee from the Regius Keeper of the Garden (Professor Bayley Balfour) that he did not put it up for an award. The question of what action the committee should take was debated, and the result was that a First Class Certificate was unanimously awarded the plant. The argument that prevailed was that a new plant was before the committee—a meritorious introduction shown for the first time, and the committee would be lacking in its sense of duty to itself and to the Society if the plant were allowed to pass unnoticed. This little incident shows, I think, how often under difficult circumstances the committees of the Society find out the right course to follow and adopt it."

MR. WILLIAM HOWE.—An interesting sequel to a most impudent theft occurred at a recent meeting of the committee of the Royal Gardeners' Orphan Fund. A month or so ago Mr. WILLIAM HOWE, head gardener to LADY TATE, at Park House, Streatham Common, left his house in the afternoon to attend a meeting of the committee. He was on the point of entering King Street, Covent Garden, at 6.45, in broad daylight, when two men dashed at him and wrested away his gold albert, together with a gold medal Mr. HOWE won at the International Horticultural Exhibition last year. He chased the ruffians for some distance, crying "Stop thief," but receiving no help from the public, he was unable to get up with them. On entering the Committee Room a little later in an agitated condition, enquiries led to an explanation of the whole affair, and unknown to Mr. HOWE the members determined to compensate him for the loss, and Mr. J. F. MCLEOD kindly undertook to look after the details. The presentation of a specially manufactured gold chain and a new "International" medal was made by the chairman, Mr. H. B. MAY, on the 4th inst., in the presence of almost every member of the Committee.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

HUMEA ELEGANS.—Judging by the answer to *A. P. G.* in the *Gardeners' Chronicle* for May 24, your correspondent would appear to have suffered by coming in contact with this plant. This induces me to give a little of my own experience on that point. Over forty years ago I had charge of a number of plants of Humea elegans in the Temperate House at Kew. I used to suffer occasionally from inflammation of the eyes, but never thought of attributing it to contact with the Humea, until, after re-potting and re-arranging the plants, I suffered an attack far worse than any experienced before. By taking extra care afterwards to avoid contact I was but little troubled. From that time to this association with the Humea always causes eye trouble. This Humea is freely used at Hampton Court, and standing on the leeward side of a mass or clump, will, if there is a breeze blowing, soon convince me that for comfort's sake it is time to make a move. Strange to say, Primula obconica does not trouble me in the least, however handled : and when a form of Rhus Toxicodendron was put into commerce under the name of Ampelopsis Hoggii, I propagated a number

from cuttings without taking any precaution to avoid contact with the sap, yet never experienced any ill-effects. *W. T.*

ROSA ALBA.—A not unu-ual denizen of old cottage gardens in the South of Scotland is the old Rosa alba, the flowers of which for a long period possessed a peculiar significance to a large section of the population, not in Scotland only, but also in parts of England. It was known as Prince Charlie's Rose, and also the Jacobite Rose, and was worn on June 10, the birthday of the Old Pretender, Prince Charles' father. An old specimen of this Rose, with a historical association, was still in existence a few years ago in The Grange Shrubbery, Edinburgh, the Prince, when passing through Edinburgh in 1745, having been presented with a Rose from this particular bush by one of the daughters of the Dick family, who, at that period, possessed the estate. The double form of Rosa alba was also used, and when neither was available a flower of the Guelder Rose was substituted. There is a very curious mistake in connection with this Rose; at least, it has some connection with it. Burnet tells us the "pretended" prince was born on Sunday, June 10, but a street ballad, tempus George I., names Monday as the day of his birth :—

"Of all the days that in the year
I dearly love but one day;
That day it is the tenth of June,
Which happened on a Monday.
In my best clothes with my white rose,
I'll drink a health to J—m—e," etc.

Folk and Plant Lore names the white Provins as that which the Jacobites wore, but on what authority is not stated. *R. P. Brotherston.*

THE NATIONAL TULIP SHOW.—Permit me to say that the notice in your issue of May 31, 1913, *re* the Royal National Tulip Show at Chelsea was a little misleading. The growers of the Florist Tulip are a very small body, and no one ever expected what the public would call a big show. Those who entered the Tulip tent saw, however, one of the very best "twelves" that have ever been staged in London. Mr. C. W. Needham had a superb lot, which by their quality amply atoned for any shortage of competitors. Another feature was the presence of several new rectified seedlings raised by Mr. A. D. Hall and then exhibited for the first time. The Tulip cult is not dead yet. I hope to see tomorrow (June 2) the seventy-eighth annual Show of the Wakefield Amateur Tulip Society, and I have been told by those who know that I shall see a wonderful sight with many quaint old-time features, which I can imagine will harmonise well with the spirit of that least mercantile of flowers, "the Florist's Tulip." *Joseph Jacob.*

SILVER LEAF DISEASE.—I notice a statement (p. 45) in the annual report (Part II.) of the Intelligence Division of the Board of Agriculture to the effect that it is doubtful whether silver leaf disease is invariably and solely due to the fungus Stereum purpureum. I would venture to express the opinion that statements of this kind implying new observations should be accompanied by the evidence or by a reference to the place in which the evidence may be found. I do not recollect that either Percival or Pickering have put forward this view, but of course it may be that my memory is at fault. In any case there is nothing in the text to indicate who is responsible for the statement. It is a fact familiar to students of science that the degree of credence to be attached to a published observation depends on the repute of the author, and it would be useful if the Board could see its way to indicate briefly the names of those who supply the more important pieces of scientific information which it uses in its Report. *Student.*

FRUIT PROSPECTS IN BLAIRGOWRIE.—If the weather remains as at present there is every prospect of good crops on small fruit trees. The season for Strawberries and Raspberries is about a fortnight later than usual, so late frosts are not likely to do any damage. Both crops look particularly healthy, and they should find a ready market, since the fruits will ripen considerably after southern supplies. Gooseberry and Currant bushes are already laden, and if there is no frost they will furnish good crops. The blossoms on the Plum and Pear trees have suffered severely from recent hailstorms and cold winds, especially those in an exposed position. Only on south walls can a really satisfactory crop be expected. It is too early to form an opinion of the Apple crop, but judging from the abundance of blossom and the present favourable weather, one would feel inclined to predict a good supply of these fruits. *Jas. Bethel, The Grange Gardens, Monifieth, N.B.*

EARLY CABBAGES (see p. 365).—Mr. Cook's success with early Cabbages in warm Sussex is evidently not so good as in cold, bleak Hindhead, where the soil is practically all sand. In the second week of August last I made a sowing of Sutton's Flower of Spring variety, and not having the room in the autumn I was obliged to defer transplanting until March At the time of preparing the ground I could not obtain animal manure, but the land was dug thoroughly twice in winter, and then dusted with slaked lime. It was allowed to remain undisturbed until the end of February, when a good dressing of wood ashes was applied, the soil forked, and a top dressing of superphosphate applied at the rate of 2 ozs. per square yard. The plants were put out at the beginning of March, and when well established the roots received light dressings of nitrate of soda on frequent occasions. The first heads were cut on May 24; the Cabbages were well formed, of good size, and very tender. They were much better than Wheeler's Imperial, which I grew the two previous seasons in land dressed with good stable manure. The plot used this season was occupied last summer with legumes. *C. Harris, Corona, Grayshott, Surrey.*

THE R.H.S. CRITICISED.—Your reply to the criticisms of the R.H.S. which lately appeared in the columns of the *Times* makes very interesting reading and fairly represents the position of the Society from an educational standpoint at the present time. I have been a Fellow of this Society for a number of years, and have watched it struggling under difficulties until within comparatively recent times, when it has become a rich and powerful body. Without going into details, it has done good work in the past, and is in a position to do much more useful work in the future. There are many who state that it favours the commercial side of the question too much, and visits to its numerous shows certainly seem to confirm this statement; but commercial horticulture represents a great and important industry, and the R.H.S. is acting rightly in promoting its interests in every possible way. How do we stand, now, in other respects? In comparison with other industries is horticulture making such rapid strides as it ought to do in the educational world? Emphatically no. How this can be remedied should become a matter for serious consideration. Horticulture is a very wide subject, and there is much scientific and research work which can be usefully undertaken, and the horticultural public is asking for it, as is shown by recent criticisms. Whether the R.H.S. or any other organisation is the body most capable of undertaking this work is another matter for careful deliberation. I very much favour the R.H.S., and your suggestion that an advisory committee should be called into existence to take up this matter. There will be obstacles to overcome other than that of finance. Gradually during recent years, and up to the present time, horticulture is becoming more and more absorbed by the Royal Agricultural Society, which, from the character of its organisation, mainly directs its efforts to the general well-being of its own particular industry, only tolerating horticulture as a less important or in many cases a somewhat insignificant subject. The name horticulture is also omitted as constituting a special industry in the great councils of the nation. The horticultural public have been greatly to blame for this. They have been too apathetic; perhaps they have been hoping that such a rich and powerful body as the R.H.S. would champion their cause. Horticulture must have scope; it must be recognised as a special industry in its aims and objects in the great councils of the nation, quite distinct from its great sister society, but working in co-operation and in conjunction with it. Until this is done special scientific and research work in horticulture will be greatly hindered and hampered, and even the great and rich R.H.S. will lose much of its power and prestige. *Alfred Gaut, The University, Leeds.*

SOCIETIES.

ROYAL HORTICULTURAL.

JUNE 3.—On the occasion of the fortnightly meeting on Tuesday last, in the Society's hall, Vincent Square, Westminster, the building was well filled, including the two annexes, with floral displays. There was only one exhibit before the Fruit and Vegetable Committee, and this body made no award to any novelty.

The exhibits of Orchids were remarkably good, and a very fine group was shown by Mr. H. S. GOODSON, who gained a Gold Medal. The Orchid Committee granted three Awards of Merit, two Cultural Commendations, and one Certificate of Appreciation.

The exhibits before the Floral Committee included Sweet Peas, Antirrhinums, Roses, Gloxinias, Ferns, Carnations, Cannas, Schizanthuses, Pelargoniums and hardy plants, including Alpines. The Floral Committee recommended eight Awards of Merit and one Cultural Commendation, which was given for the magnificent specimen of Saxifraga longifolia illustrated in fig. 166.

At the three o'clock meeting in the lecture-room Professor O. V. MULLER, of Elphinstone College, Bombay, gave a lecture on "The Wild Flowers of Mahabaleshwar, India." The lecture was illustrated by water-colour drawings by Mrs. Muller.

Floral Committee.

Present: H. B. May, Esq. (in the chair), Messrs. W. J. Bean, E. H. Jenkins, W. J. James, W. P. Thomson, Chas. E. Shea, Chas. Dixon, George Paul, James Hudson, John Green, John Dickson, J. W. Moorman, Chas. Blick, W. Howe, Thos. Stevenson, B. Crisp, W. Cuthbertson, R. C. Notcutt, Chas. T. Druery, E. A. Bowles, W. A. Bilney, W. B. Cranfield, R. W. Wallace, C. R. Fielder, John Jennings, J. F. McLeod, A. Watkins, J. W. Barr, F. Page Roberts, Ed. Mawley, and R. Hooper Pearson.

Messrs. DOBBIE & Co., Edinburgh, showed a very attractive exhibit in the floral section in their group of Sweet Peas and Antirrhinums. This exhibit was arranged with excellent taste, the blooms showing well against a background of dark velvet. The Sweet Peas included such sterling sorts as Lavender George Herbert, Dobbie's Cream, Dobbie's Scarlet, Mrs. M'Ilwrick (mauve and blue), King White, Ruby Palmer (rich ruby-red), and Thomas Stevenson (orange-scarlet). It was difficult to determine which to admire most, the Sweet Peas or the Antirrhinums, for never have we seen better spikes of these latter flowers. Cottage Maid (rose and white), Carmine Queen Dobbie's Scarlet, Golden Morn, Golden Queen, White Queen, Crimson King, Moonlight (apricot yellow) and Brilliant (carmine) may be mentioned as some of the best varieties. (Silver-Gilt Flora Medal.)

Messrs. W. CUTBUSH & SON, Highgate, filled a table with dwarf Polyantha Roses, Carnations and a few select Alpines. The Roses were flowering superbly, the plants being excellent specimens; the varieties Joan of Arc (white). Jessie, White Dorothy, Erna Teschendorff and Dorothy Perkins were conspicuously good. The Carnations included the new variety Lady Ingestre, of pale pink colour. Some fine spikes of Watsonia Ardernei and uncommon Lilies found a place in this interesting exhibit, for which a Silver Banksian Medal was awarded.

Messrs. JAMES VEITCH & SONS, LTD., King's Road, Chelsea, filled two large tables, facing each other, with miscellaneous flowering plants, and, as a separate exhibit, a group of standard Fuchsias with a ground of the bright yellow Calceolaria Clibranii; clumps of Anchusas and species of Primulas. The tables of flowers were much admired, showing continuous lines of gay colours of such subjects as Gloxinias, Exacum macranthum, Spanish Irises and Streptocarpus,

whilst prettily arranged in banks of Adiantum Ferns were clumps of Nemesias overhung by an archway furnished with Fuchsias. (Silver-Gilt Flora Medal.)

Mr. L. R. Russell, Richmond, exhibited a pretty group of ornamental foliage and flowering shrubs, with a front row of Nertera depressa, these plants bearing a heavy crop of their pretty coral-red berries. Golden-leaved Ivies were strikingly handsome, such varieties as Hedera flavescens and H. palmata aurea being represented. The group also included Acer palmatum, Carpentaria californica, Abelia floribunda, and Ceanothus dentatus. (Silver Banksian Medal.)

Mr. A. Ll. Gwillim, Cambria Nursery, Sidcup, Kent, was awarded a Bronze Flora Medal for tuberous-rooted Begonias, Aquilegias, and Gloxinias.

Mr. S. Bide, Farnham, showed vases of Sweet Peas.

Messrs. Carter, Page and Co., 52 and 53, London Wall, London, exhibited Dahlias, Pelargoniums, Antirrhinums, and Violas.

A Silver Flora Medal was awarded to A. G. Waley, Esq., Reigate, for a group of the floriferous Schizanthus wisetonensis.

M. Drummond, Esq., Southampton, was awarded a Bronze Flora Medal for an exhibit of Aquilegias.

Messrs. Thomas Rochford and Sons, Ltd., Turnford Hall, near Broxbourne, staged well-grown specimens of Araucaria Silver Star, which has a zone of silver around each whorl of branches.

Messrs. J. Cheal and Sons, Crawley, showed specimens of several interesting trees and shrubs—Solanum crispum in flower, Rhododendron fastuosum fl. pl., and Cistus ladaniferus. Acer japonica aurea and Quercus concordia are two fine trees with golden foliage.

Messrs. Godfrey and Son, Exmouth, were awarded a Bronze Flora Medal for Poppies and Pelargoniums of the Regal and Show types. The Regal varieties have crimped petals, suggestive of doubling; those of the Show type have rounder, smaller flowers with smoother petals. There are others midway between the two, known as semi-Regal, and of these Ettie, with salmon-pink petals with dark blotches, is one of the most striking sorts. Beauty of Exmouth, a blush-white variety with crimson maroon markings, is another fine flower.

Messrs. R. H. Bath, Ltd., Wisbech, arranged, as a floor group, an exhibit of Tulips, and, on a table adjoining, varieties of Sweet Peas. The Tulips were remarkably bright and fresh considering that these flowers are now generally over in gardens. (Silver Banksian Medal.)

Messrs. Sutton and Sons, Reading, exhibited their fine strain of long-spurred Aquilegias in shades of blue, crimson and yellow, pink, and other colours, besides a large number of mixed hybrids. The exhibit made a great bank of bright colours.

Messrs. H. Cannell and Sons, Swanley, Kent, displayed a group of Rambler Roses, varieties of Cannas, and numerous zonal-leaved Pelargoniums, which this firm exhibit consistently well. The Cannas included several novelties, of which Nera, a salmon-rose flower mottled with red; Leandre Vaillat, yellow, spotted with red; Furstein Zu Otlin Wallesten, having a very large truss of bright-red flowers, set off by dark-coloured foliage; Dr. Benoit, dark crimson; and John Farquhar, salmon-pink, are a selection. (Silver-Gilt Banksian Medal.)

Varieties of Roses were shown by Messrs. G. and W. Burch, Peterborough, for which the award of a Silver Banksian Medal was made. Mrs. Foley Hobbs, Mrs. M. H. Welch, British Queen, Mrs. Dudley Cross, Claudius, and Duchess of Normandy were the more notable varieties.

Messrs. B. R. Cant and Sons, Colchester, showed a big group of Pillar Roses, of such varieties as Blush Rambler, White Dorothy, Excelsa, Minnehaha, and Lady Godiva, which has double flowers, and is described as a salmon form of Dorothy Perkins. In the front of the exhibit were dwarf plants of Scotch Roses and [illegible] of Rosa rugosa. (Silver Flora Medal.)

Mr. Elisha J. Hicks, Hurst, Twyford, Berks, staged blooms of the very sweet-scented pink Rose, Mrs. Chas. Reed, and the variety Mrs. G. Norwood, a Rose of fine shape, coloured [illegible]

Mr. Chas. Blick, Nurseryman, Hayes, was awarded a Silver Banksian Medal for an exhibit of border Carnations. The finest picotee-edged variety was John Ruskin, the perfectly-formed flowers being yellow, with a narrow rose-coloured margin. Salome is a beautiful mauve-coloured fancy variety, and Skirmisher is another fine flower of this type. Mrs. Wharton, apricot self, and Donald MacDonald, rose fancy, are other varieties of merit.

Mr. H. Burnett, Guernsey, again contributed a stand of excellent Carnations of the perpetual-blooming type, for which he was awarded a Silver Flora Medal.

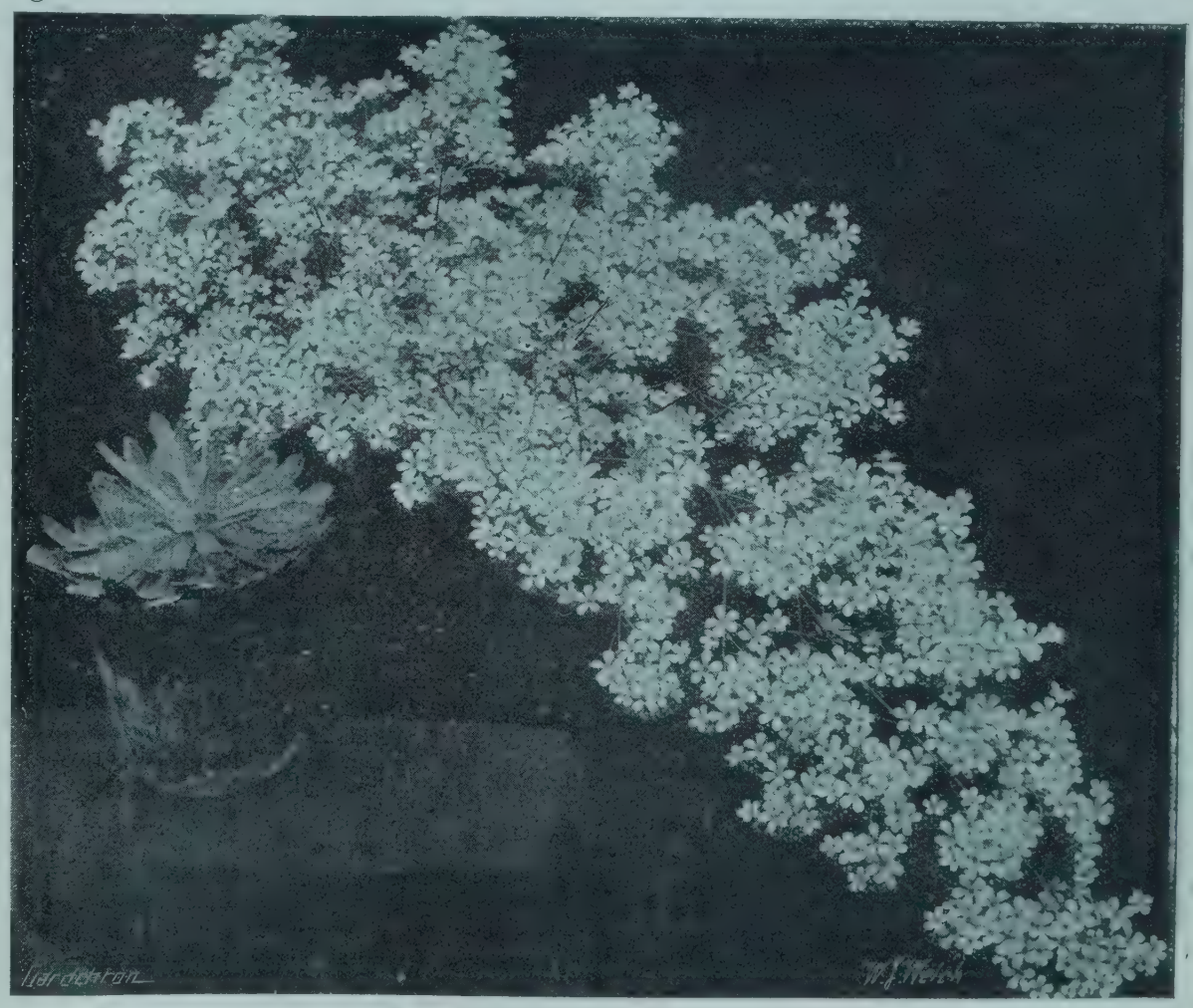
Messrs. Stuart Low and Co., Bush Hill Park, Enfield, were awarded a Silver Banksian Medal for Carnations, including the varieties Cinnabar, Fairmount, Lady Alington, and Baroness de Brienen. (Silver Banksian Medal.)

Mr. J. D. Webster, Nurseryman, Chichester, exhibited Carnations, including his new variety, Rose du Barrie, a sport from Winsor, which it resembles in all points save colour. This exhibitor also showed border flowers, in the centre of which was a stand filled with big blooms of Cistus Brilliant, the rose-coloured petals having each a maroon blotch; and Watsonia Ardernei. Iris germanica macrantha and I. albicans Princess of Wales (white) showed conspicuously amongst a large number of these beautiful flowers. (Bronze Flora Medal.)

Mr. Amos Perry, Enfield, showed Irises, Oriental Poppies and other border flowers. Iris siberica atropurpurea and Papaver orientale Orange Queen were the finest of the Irises and Poppies respectively. (Silver Banksian Medal.)

The very large exhibit of hardy border flowers shown by Messrs. Geo. Bunyard and Co., Maidstone, included most subjects in season—Irises, Poppies, Pyrethrums, Lupins, Delphiniums, Eremuri, etc. A batch of excellent pot plants of Wahlenbergia vincæflora, was a conspicuous feature of this imposing display. (Silver Flora Medal.)

Messrs. Gunn and Sons, Olton, showed their specialities in border Phloxes, including the varieties Elizabeth Campbell, old rose colour; Flora, one of the largest flowered varieties, the white petals having a faint suffusion of lavender; George A. Stroehlein, a brilliant



Photograph by J. Gregory.

Fig. 165.—A fine specimen of Saxifraga pyramidalis in Sir Everard Hambro's collection.

the beautiful yellow Calla Pentlandii. (Silver Flora Medal.)

Messrs. J. Piper and Sons, Bayswater, had many delightful plants of Wistaria in ornamental earthenware pots, as imported from China. The majority of the specimens were small, but they were crowded with flowers, mostly of the white variety. The plants would appear beautiful either in the dwelling-house or garden. (Bronze Flora Medal.)

Messrs. H. B. May and Sons, The Nurseries, Edmonton, exhibited 100 varieties of stove and greenhouse Ferns, all remarkably well cultivated, and furnished with bright green fronds of this season. A selection of the choicer specimens includes Platycerium Wallichii, P. grande, Drynaria quercifolia, Polypodium Vidgenii, Pteris Childsii, Adiantum chrysophyllum, Davallia fijiensis, D. f. effusa, Pellæa ternifolia, and Niphobolus Lingua. (Silver Banksian Medal.)

Messrs. John Peed and Son, West Norwood, staged numerous plants of Gloxinia, bearing plenty of fine flowers in a great variety of [illegible]

Messrs. Barr and Sons, King Street, Covent Garden, staged [illegible] bearded Irises: Lupins in variety; Lilium monodelphum Savitzianum,

flower, the colouring being vermilion-red; and Dr. Charcot, a fine lavender-coloured variety. (Silver Banksian Medal.)

Messrs. Bakers, Wolverhampton, showed hardy flowers in variety. Besides the usual subjects of a more showy character, there were fine plants of Ramondia pyrenaica, Primula Bulleyana and Silene Hookeri, which has delicate pink-coloured flowers.

Mr. G. Reuthe, Keston, Kent, was awarded a Silver Banksian Medal for a collection of hardy plants and Alpines. We noticed the rare Edraianthus dinaricus, with pretty violet-coloured flowers; Primula sikkimensis bearing fine heads of rich golden blossoms; Orchis hircina, the Lizard Orchid; Ætheopappus pulcherrimus, like a mauve-flowered Centaurea: Rhododendron hirsutum album; Lewisia columbiana and Pæonia lutea.

Messrs. W. Wallace and Co., Colchester, put up a large exhibit of hardy flowers, in which Irises were a great feature, the most delightful of these being Iris pallida dalmatica, with petals a beautiful shade of lavender. There were [illegible]

like flowers, being greenish suffused with brown and red, and other interesting flowers. (Silver Banksian Medal.)

Mr. C. ELLIOTT, Stevenage, furnished a pleasingly arranged rockery with large breadths of Campanula caucasica Stevensii, Saxifraga pyramidalis; the new S. Cecil Davis (C. Hostii × C. longifolia) and other Alpines.

Messrs. KELWAY AND SON, Langport, showed great banks of beautiful Pæonies, Lupins, Poppies, Delphiniums, Pyrethrums and other border flowers. Aphrodite and Lord Rosebery are two choice Pyrethrums; the former is like a quilled white Aster, the other is of a fine crimson colour. (Silver Flora Medal.)

Messrs. GEO. JACKMAN AND SON, Woking, were the exhibitors of many interesting hardy flowers. Their Irises were very pretty, and none was more beautiful than Gazelle, which has petals of a china-blue colour. Leonidas, heliotrope, is another Iris of much merit. (Silver Banksian Medal.)

Mr. JAMES BOX, Lindfield, contributed a large group of hardy flowers, in which prominence was given to the sweet-scented Pæonia albiflora grandiflora. A clump of Eremuri at the back overhung masses of fine Larkspurs, and in addition there were sheaves of Poppies, Geums, Pyrethrums, Irises and similar subjects. (Silver Banksian Medal.)

Mr. C. W. CHANTLER, Cockmannings, St. Mary Cray, Kent, showed varieties of Irises of the germanica and flavescens types.

Hardy flowers were also shown by Messrs. W. ARTINDALE AND SON, Sheffield; Messrs. W. AND J. BROWN, Peterborough; Messrs. THOMPSON AND CHARMAN, Bushy, Hertfordshire; Mr. M. PRICHARD, Christchurch, Hampshire (Bronze Flora Medal); Messrs. G. AND A. CLARK, LTD., Dover (Silver Banksian Medal); Messrs. T. S. WARE, LTD., Feltham (Bronze Flora Medal); Messrs. W. FELLS AND SON, Hitchin; Messrs. WHITELEGG AND PAGE, Chislehurst; and the Misses HOPKINS, Shepperton.

AWARDS OF MERIT.

Paeonia "L'Espérance."—A beautiful sulphur-yellow tree or moutan Pæony. The petals are in three rows, and the flower possesses considerable substance, but the crimson stigmata and filaments, and the purplish-rose blotches at the base of the petals give the effect of a "single" variety. Shown by Messrs. KELWAY AND SON.

Papaver "Perry's Unique."—An orange-blotch at the base of each petal. The flowers are not large, and the four petals are scarcely broad enough to overlap, but each segment is deeply and evenly serrated, which provides a toothed fringe extending for one-third the length of the petals. Shown by Mr. AMOS PERRY.

Stachys corsica.—A delightful, floriferous, hardy little species suitable for carpeting the moraine or rock garden. The habit is quite prostrate, and in early spring the dense carpeting growth is thickly studded with large, white, sessile flowers, which are flesh-tinted around the margin. The leaves are round or ovate, with a few teeth, on stalks as long as the blade. Shown by Messrs. R. WALLACE & Co.

Primula "Excelsior."—This is the finest hybrid derived from P. Cockburniana. The flowers are rich and glowing orange-scarlet, nearly as large as those of P. pulverulenta, and borne in successive tiers as in that species, but on more slender, wiry, and less farinose stems. The leaves are wrinkled and green, much veined below but not farinose, and are thus very close to those of P. × Unique. The parentage was given as P. Cockburniana ♀ × P. Unique ♂ and as the same plant was exhibited at the Temple Show three years ago, the perennial character of the hybrid seems assured. Shown by Messrs. J. VEITCH AND SONS.

Salix magnifica.—A plant some 4 feet high of this new Chinese species was shown in a pot without flowers or fruits. The foliage is extraordinary for the genus, almost suggesting a Magnolia at first glance. The best developed leaves were as much as 6 inches long and 3 inches in breadth, ovate in shape, glaucous-green above, and pale, purplish-green below, and quite glabrous. The leaf stalk is purple, and 1 inch long. The species has not yet flowered in this country, but we understand that the dried specimens of the catkins are as much as 1 foot in length. Shown by the Hon. V. GIBBS (gr. Mr. E. Beckett).

Potentilla "Boule de Feu."—A seedling said to have been derived from P. argyrophylla × P. atrosanguinea. The flowers are a deep blood-crimson. The leaves are trifoliate and thinly covered with silky hairs. In habit, the growths are fairly erect and reach from 9 to 12 inches. Shown by Mr. A. HEMSLEY.

Iris gracilipes (see *Gard. Chron.* August 15, 1908, fig. 49).—A fairly well-known little Japanese species, but generally of rather diffi-



Photograph by J. Gregory.

FIG. 166.—SAXIFRAGA LONGIFOLIA FOR WHICH THE R.H.S. CULTURAL COMMENDATION WAS AWARDED ON TUESDAY LAST.

grown plants are established, however, they prove perfectly hardy and vigorous. It belongs to the Evansia section of the rhizomatous Irises. The foliage is grass-green and grass-like. The flowers are borne in twos or threes on slender, wiry stems about six inches high. The general colouring of the horizontal standards and falls is mauve-lilac, but the latter have a central ground colour of white, prettily veined, from which rises the small white crest or ridge. Mr. Dykes states that the species thrives in Japan in open glades in wooded slopes with a cool aspect, in loose rich soil such as Primroses love. An open situation in the rockery is more suitable for its cultivation in this country. Shown by the WARGRAVE HARDY PLANT NURSERY.

Delphinium "Mrs. F. Brewster."—A large-flowered, semi-double heliotrope-coloured variety, with the flowers held well, but not densely, in a bold spike. The colour is a very pleasing shade, closest in the *Répertoire de Couleurs* to the pale shades of Ageratum blue, No. 201. The individual blooms measured over two inches in diameter. Shown by Mr. R. C. NOTCUTT.

CULTURAL COMMENDATION.

Saxifraga longifolia var. magnifica (see fig. 166).—A very fine pan-grown specimen, with the leaf rosette one foot in diameter, and the great arching, profusely-flowered spike two feet in length and one foot through at its lower end. Shown by Sir EVERARD HAMBRO (gr. Mr. Grandfield).

OTHER NOVELTIES.

Messrs. JAMES VEITCH & SONS showed Primula conspersa, a new species from West Kansu, where it was found by Mr. Purdom. The species is allied to P. sibirica, but the flowers are rather more rosy. They are about ¾in. in diameter, and borne in an umbel of about twelve flowers on mealy stems nine inches high. The leaves are small, about 1½ by ½ inch long, finely but variably serrated, which distinguishes it from P. sibirica, rather firm textured and erect and not farinose.

Mr. VICARY GIBBS showed Viburnum hupehense, a species with open, dark brown-purple spreading branches. The leaves are broadly ovate, tapering sharply to a fine point, serrate at the edge, thin textured, softly downy above and strongly feather-veined below. The small, white flowers are all perfect, and are carried in close umbellate cymes from 3 to 4 inches in diameter. Mr. GIBBS also sent interesting specimens of Ribes longeracemosum, of which the best racemes were eighteen inches long; and Acer lævigatum with glossy, yellow-green, lanceolate leaves prettily suffused with crimson.

Orchid Committee.

Present: J. Gurney Fowler, Esq. (in the chair), and Messrs. Jas. O'Brien (hon. sec.), J. S. Moss, J. Wilson Potter, Gurney Wilson, R. A. Rolfe, F. Sander, S. Low, F. M. Ogilvie, J. Charlesworth, J. Cypher, W. H. Hatcher, Geo. Hunter, W. H. White, Sidney Flory, W. Bolton, R. Brooman White, de B. Crawshay, T. Armstrong, A. Dye, C. H. Curtis, J. E. Shill, Sir Harry J. Veitch and Baron Sturlen, of Holland.

H. S. GOODSON, Esq., Fairlawn, Putney (gr. Mr. G. E. Day), was awarded a Gold Medal for a very fine and well-arranged group in which were representatives of practically all the showy Orchids of the season together with an interesting selection of curious Masdevallias, Pleurothallis, Promenæas and Bulbophyllums. Odontoglossums, both species and hybrids, were in great variety, the best noted being O. Lord Carnarvon and O. Snowflake of unrecorded parentage, O. Dema (Thompsonii × cirrhosum) of a deep claret colour; O. crispum H. S. Goodson, very handsome, O. c. Mrs. Humphrey, O. c. Waterloo, O. c. The Mikado, and O. c. Frederickii, all pretty and distinct; O. eximium Leopoldii, O. amabile roseum, O. Wilckeanum Goodson's variety, the pretty O. Goodsoniæ, O. ardentissimum Herbert Goodson, and many others. Among Cattleyas were the white C. Mossiæ Wageneri and a new and distinct blush-tinted form flowering for the first time; C. Lawrenceana, C. Mendelii, fine forms of Lælio-Cattleya Canhamiana, and other Lælio-Cattleyas.

Messrs. ARMSTRONG AND BROWN, Tunbridge

of the beautiful Cœlogyne pandurata, which had been grown from single bulbs, and were now bearing 12 and 13 large emerald green and black flowers on a spike. Lælio-Cattleyas, Brasso-Cattleyas, Odontoglossums and fine Odontiodas predominated, specially noteworthy being Lælia purpurata Leyswood variety, white with violet markings on the lip; and the richly-coloured L. p. Orchidhurst variety; several fine Lælio-Cattleya Martinétii, the Orchidhurst variety being novel in colour, having the sepals and petals orange-tinted rose, with violet lip; a good selection of L.-C. Canhamiana, some excellent forms of Cattleya Mendelii and C. Mossiæ, the most distinct being C. Mendelii Thalia, white slightly tinted with lavender colour, and having a violet blotch on the lip; and C. Mossiæ alba raised from seed, being pure white with orange disc to the lip. Various unnamed crosses were also included, one between C. Mendelii and L.-C. Phœbe being very pretty, with yellowish-cream flowers with a purple blotch on the lip. Various Miltonias, a showy lot of Odontiodas, Brasso-Cattleya Digbyano-Mossiæ splendens of a deep rose; and among curious plants Bulbophyllum galbinum and Microstylis congesta.

Messrs. Sander and Sons, St. Albans, secured a Silver Flora Medal for an excellent group, the centre having quite a collection of the best white-flowered Phalænopsis, and on either side groups of their handsome strain of Lælio-Cattleya Fascinator, one of fine shape being nearly white; and of L.-C. Canhamiana, including the forms known as Rex and alba. New forms were Lælio-Cattleya Caledonia (C. Mendelii × L.-C. Bletchleyensis) white tinged with rose and having a showy, fringed crimson lip; L.-C. Kathleen (L. tenebrosa × L.-C. Canhamiana), a fine dark flower, and L.-C. Hibernia (C. Schroderæ × L.-C. Bletchleyensis) of fine shape and novel colour. A batch of Miltonia vexillaria, M. Bleuana and M. St. André, a fine lot of Odontoglossums and Odontiodas, some interesting species including several Bulbophyllums, the white Maxillaria fragrans, and grand plants of the large type of Dendrobium Dearei.

E. H. Davidson, Esq., Orchid Dene, Twyford, secured a Silver Banksian Medal for a select group all of good quality, the most remarkable being the handsome Odontoglossum Aireworth Orchid Dene variety, a model flower and very finely coloured; Cattleya Mossiæ Golden Ray, the large rose flowers, with purple-marked lip, having a golden yellow ray up the petals, and a similar tint inside the margin. Two Odontoglossum crispum xanthotes of the best type, the finely-blotched O.-C. Mabel, and other good Odontoglossums, Lælio-Cattleyas, etc., were also included.

Messrs. J. Cypher and Sons, Cheltenham, staged an effective group, for which a Silver Banksian Medal was awarded. The centre was of Dendrobium Thwaitesiæ Veitch's variety, still the finest rich yellow, and Thunia Veitchii, and handsome Lælio-Cattleya Aphrodite. Fine specimens of Miltonia vexillaria, M. Bleuana, Brasso-Cattleya Digbyano-Mossiæ, Cypripedium caudatum, Oncidium pulchellum, and Masdevallias were also noted

Messrs. Charlesworth and Co., Haywards Heath, were awarded a Silver Banksian Medal for a group of fine specimens, among which were noted a grand plant of the deep rose Miltonia vexillaria Empress Augusta Victoria with 13 spikes, Lælio-Cattleya Canhamiana alba, and the finely-coloured L.-C. C. King Edward VII., the fragrant white Trichopilia Backhouseana; richly-coloured Odontioda Charlesworthii, and some handsome Lælio-Cattleya Fascinator.

Messrs. Stuart Low and Co, Bush Hill Park, secured a Silver Banksian Medal for a fine group, principally Lælio-Cattleyas, Cattleyas, and Dendrobiums, among which were several fine specimens of their very tall-growing summer-flowering form of Dendrobium formosum giganteum well furnished with flowers. Lælio-Cattleya Canhamiana Duchess, a handsome white-petalled form; a pretty natural hybrid Vanda Charlesworthii, Dendrobium crystallinum albeus, and a lot of the red Renanthera Imschootiana, a very large-flowered form of Cypripedium [illegible]reum, were also included.

Messrs. Hassall and Co, Southgate, received a Silver Banksian Medal for a neat group with a fine Oncidium serratum and two tall Odontoglossum luteo-purpureum at the back. Good Miltonia vexillaria Cobbiana, Lælio-Cattleya Fascinator, Cattleya-Mossiæ, Odontioda Charlesworthii, and a specially fine Odontoglossum Uro-Skinneri.

Messrs. W. B. Hartland, Ballintemple, Co. Cork, were awarded a Bronze Banksian Medal for a small group of Odontoglossums, Cattleya Mossiæ, C. Mendelii, Cypripediums, etc.

Sir Trevor Lawrence, Bart., Burford (gr. Mr. W. H. White), showed three fine plants of the handsome Burford strain of Lælio-Cattleya Canhamiana, two L.-C. Fascinator-Mossiæ superba, the rare Oncidium Clæsii, Epidendrum organense with 18 tufts of flowers and Odontoglossum Lairessei (see awards).

Pantia Ralli, Esq., Ashstead Park, sent a remarkably fine form of Odontoglossum Aireworth.

C. J. Lucas, Esq., Warnham Court (gr. Mr. Duncan), sent Odontoglossum triumphans Ladybird of the latisepalum class, O. Eva (cirrhosum × Kegeljani) and Lælio-Cattleya Freak (see awards).

Ernest G. Mocatta, Esq., Woburn Place, Addlestone (gr. Mr. Stevenson), sent Odontoglossum Jasper (Woburn Place variety) of very fine colour with two strong spikes.

Mr. C. F. Waters, Balcombe, showed a selection of good Cattleyas.

J. Gurney Fowler, Esq., Glebelands, South Woodford (gr. Mr. J. Davis), showed Odontoglossum crispum Ruth, a handsomely blotched flower.

Monsieur H. Graire showed Odontoglossum Saturne (nebulosum × crispo-Harryanum), pale yellow marked brown.

E. R. Ashton, Esq., Camden Park, Tunbridge Wells, sent Odontioda Adrastia (O. da. Bohnhoffiæ × O. crispum).

Francis Wellesley, Esq., Westfield, Woking (gr. Mr. Hopkins), showed the new and fine Lælio-Cattleya Lady Roberts (L.-C. Euphrosyne × C. D. aurea), with large and handsomely formed flowers of deep magenta rose with intense ruby-claret lip, with fine gold lines at the base.

R. Brooman White, Esq., sent Odontoglossum Wilckeanum The Kaiser, very finely flowered.

Mr. H. Dixon, Spencer Park Nursery, Wandsworth Common, showed Cattleya Mossiæ Imperiale, a dark-coloured large form.

Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. Collier), sent the rare yellow Catasetum Cliftonii and the allied C. Colmaniæ, greenish yellow with brown markings, both with male flowers; and a strong specimen of C. Cliftonii with a spike of fine large female flowers, pale green, with long inverted fleshy labellum; also Lælio-Cattleya Epicasta.

AWARDS.

Award of Merit.

Odontoglossum Aireworth Orchid Dene variety (*crispum blotched form* × *Lambeauianum*), from E. H. Davidson, Esq., Orchid Dene, Twyford. A grand variety with broad-petalled, large flowers, the outer third of the segments tinted pale rose, the inner parts handsomely blotched dark red. Lip white, with purple spotting at the base.

Odontoglossum Lairessei (*Edwardii* × *Cervantesii*), from Sir Trevor Lawrence, Bart. (gr. Mr. W. H. White). Inflorescence branched. Flowers claret-red on the inner halves of the segments, white beyond.

Odontoglossum Neptune (*crispum* × *nebulosum*), from M. H. Graire, Amiens. A finely blotched form of the lighter coloured type which secured an Award of Merit September 24, 1912.

Cultural Commendation.

To Mr. W. Smith, gr. to Albert Pam, Esq., Malting Farm, Little Hallingbury, Bishops Stortford, for a magnificent specimen of Cattleya Mossiæ on native wood collected four years ago and now bearing about 100 flowers and buds.

To Mr. W. H. White, orchid grower to Sir Trevor Lawrence, for Epidendrum organense with 18 spikes.

Certificate of Appreciation

To C. J. Lucas, Esq., for Lælio-Cattleya Freak (C. citrina × L. purpurata), distinctly resembling C. citrina in growth, the drooping flowers being whitish with purple-veined lip.

Fruit and Vegetable Committee.

Present: A. H. Pearson, Esq. (in the chair), Messrs. Jos. Cheal, Edwin Beckett, Henry Hooper, P. Debell Tuckett, W. H. Divers, C. G. A. Nix, J. Davis, A. R. Allan, A. Bullock, and S. T. Wright (secretary).

Messrs. James Carter & Co., Raynes Park, showed seven varieties of Cabbage Lettuces, arranged as in a border, the roots planted in soil. It was a very novel and excellent method of displaying them, and had the advantage, moreover, in that the heads remained perfectly fresh. The finest of all was Holborn Standard, a very crisp, big-hearted variety. Grand Admiral was another large sort shown well. Harbinger, with its bright green curled leaves was the most attractive, and there were some with bronze leaves such as Marvel, Continuity and Brown Dutch. (Silver Banksian Medal.)

The only other exhibit in this section was a new Tomato, shown by the Right Hon. the Earl of Denbigh, Newnham Paddox, Lutterworth (gr. Mr. W. Harmor). The committee recommended the variety to be sent to the Wisley Gardens for trial.

BATH AND WEST OF ENGLAND AGRICULTURAL.

May 27-31.—What promised at one time to be a record exhibition so far as the horticultural section was concerned, was unfortunately marred by a gale which occurred on the fourth day. Nevertheless, the show opened in brilliant weather, and no fewer than 3,666 visitors passed the turnstiles on the opening day, making it a record first-day attendance.

The horticultural arrangements were under the management of the Rev. A. T. Boscawen.

Messrs. R. Veitch & Co., Exeter, screened the wooden partition at the end of the tent with Conifers, a large plant of White Lilac, masses of bright Rhododendrons, Hydrangea hortensis varieties, and Calceolarias Veitchii and Bronze Age. A small pool was seen in front of the group, and Alpines were arranged in little terraces supported by virgin cork and intermingled with rare half-hardy shrubs, such as Edwardsia grandiflora, Crinodendron Hookeri, and Embothrium coccineum. An arch of Rose Tausendschön on one side attracted attention, whilst dwarf Polyantha Roses were also shown. A large plant of Hyeamanthus Ratherina was a feature in this display.

Messrs. Reamsbottom & Co., Geashill Nursery, King's Co., showed St. Brigid Anemones.

Messrs. H. and W. Evans, The Hardy Plant Nursery, Llanishen, near Cardiff, had an exhibit of Alpines, backed by bunches of Lupins, Trollius, Irises, Thermopsis, and other hardy flowers, including numerous specimens of the pale yellow-flowered Primula sikkimensis, Saxifraga pyramidalis, S. Aizoon rosea, and Dianthus alpinus.

Messrs. Jarman & Co., Chard, showed Centaureas, Carnations, Zonal-leaved Pelargoniums, and Sweet Peas.

Mr. H. N. Ellisson, West Bromwich, exhibited a large variety of well-grown Ferns.

Messrs. Rich & Co., Bath, showed Pyrethrums, Violas, and other hardy herbaceous flowers.

An exhibit of Schizanthus, large-flowered Calceolarias and bunches of Rhododendrons was contributed by Mr. H. Hodge, Trevarrick House, St. Austell, Cornwall.

Messrs. W. Cutbush & Son, Highgate, had an important exhibit at one entrance of the tent, comprising Weeping Roses, Palms, Carnations and Hydrangeas. The last-named were the most noticeable in this exhibit. The deep blue of the Japanese variety Oteska, the large pure white flowers of Mme. E. Mouillère, and the peculiar tone of blue of Général de Vibrage were the most attractive in colour.

The English Home of Hardy Plants, Hessenford, Cornwall, arranged a rockery in the open.

Messrs. J. Waterer & Sons showed Rhododendrons: the blooms were not quite so excellent as we have seen them at these shows owing, doubtless, to a lack of sunshine last year.

Messrs. Godfrey & [illegible] Exmouth, showed

a mixed exhibit of Astilbes, Ferns, Double White Marguerites and Pelargoniums.

Messrs. GEO. COOLING & SONS showed Roses and Clematises.

Mr. V. T. HILL, Mendip Nurseries, Langford, arranged an exhibit of Alpines; plants of Asperula suberosa, Helichrysum frigidum, and the new Wahlenbergia vincæflora were especially good.

Messrs. W. TRESEDER, Ltd., Cardiff, showed Pelargoniums and a collection of Dahlias.

Messrs. TRESEDER & Co., Truro, put up a mixed exhibit containing a fine specimen of Dicksonia antarctica and tender shrubs, such as Metrosideros floribunda, Abutilon vitifolum, Leptospermum bullatum and Ozothamnus rosmarinifolius. Calceolaria Burbidgei has dainty little flowers of the purest white, whilst Rhododendron triflorum is a pleasing shade of yellow.

Messrs. W. RANDALL, Exeter, showed Acers, Hydrangeas, and various other plants, including Armeria Langeana, the best variety of Thrift.

Messrs. YOUNG & Co., Cheltenham, displayed Carnations, including particularly good blooms of Cecilia.

The DEVON ROSERY & FRUIT FARM Co., Torquay, had a large exhibit of Roses, Ferns and foliage plants, and Messrs. ROWLAND ADAMS & SONS also contributed Roses.

Messrs. BLACKMORE & LANGDON, Bath, staged Begonias of their usual excellence, while spikes of Delphinium Capri (pale blue) and Moerheimei (pure white).

LINNEAN.

ANNIVERSARY MEETING.

MAY 24.—The anniversary meeting was held on the 24th ult., the President, Prof. E. B. Poulton, F.R.S., in the chair.

Sir ERNEST CLARKE exhibited, by permission of the owner, 15 pages of MS. by Oliver Goldsmith (1728-1774), of the first section of his book relating to birds in his *History of the Earth, or Animated Nature*, 1774. These pages of manuscript once belonged to Dr. Thomas Percy, afterwards Bishop of Dromore (1729-1811), who was an intimate friend of Goldsmith, and collected materials shortly after the poet's death for a memoir of him. Owing to disputes with the publishers this memoir was not published until 1801, as part of the 4 vols. of *Miscellaneous Works of Oliver Goldsmith, M.B.*, and then without the bishop's imprimatur; but the following passage from it is evidently of Percy's composition, and is no doubt based to some extent upon the MSS. now shown:—"His elegant and entertaining style in prose flowed from him with such facility that in whole quires of his histories, Animated Nature, etc., he had seldom occasion to correct or alter a single word." (Vol. I., p. 133.) *Cf.* Dr. Johnson at the dinner of the Literary Club, April 30, 1773:—"Sir, he [Goldsmith] has the art of compiling and of saying everything he has to say in a pleasing manner. He is now writing a Natural History, and he will make it as entertaining as a Persian tale."

The treasurer's annual statement of accounts was received and adopted, upon the motion of the president.

The general secretary then read his report, as follows:—Since the last anniversary the deaths of the following have occurred or been ascertained—namely: 18 Fellows and 1 foreign member; 17 Fellows have withdrawn, and 3 Fellows have been removed from the list by order of the Council. In the same period 35 Fellows have been elected, of whom 30 have qualified to the present date, and 1 foreign member.

The librarian's report was then submitted, showing that during the past year 97 volumes and 152 pamphlets had been received from private individuals; 381 volumes and 63 parts from various Universities, Academies and scientific societies; besides 93 volumes and 20 parts in exchange and donations from editors and proprietors of independent periodicals. The Council, upon the recommendation of the Library Committee, had sanctioned the purchase of 212 volumes and 33 parts of independent works. The total additions amounted to 783 volumes and 268 separate parts. The number of volumes bound amounted to 705.

The following officers were elected:—President, Prof. E. B. Poulton, F.R.S.; Treasurer, Horace W. Monckton, F.G.S.; Secretaries, Dr. B. Daydon Jackson, Dr. Otto Stapf, F.R.S., and Prof. G. C. Bourne, F.R.S.

The President handed Lieut. Count Wilhelm von Bentinck-und-Waldeck-Limpurg, who attended from the German Embassy, Linnean Gold Medal awarded to Professor Adolf Engler.

GENERAL BULB GROWERS (HAARLEM).

THE following Awards have been made at recent meetings of the Floral Committee of the above Society:—

FIRST-CLASS CERTIFICATES to *Hyacinths Marconi* (dark rose), *Prince Hendrik* (rosy-white), *Princess Juliana* (white), and *Purity* (white). *Narcissus Marconi* (white perianth, and a yellow trumpet).

AWARDS OF MERIT to *Narcissi Chintz; St. Olaf; Blandine; Cleopatra; Dandy; King Alfred; Edison; Glory of Warmond; Tetis; White Grace; Golden Rose; Jonquilla "Hybrida Giant"; "Orange Queen"* (*odoratus*); *Campernelli giganteus* (*odoratus*); *Admiration* (*Poetaz*); *Agnes* (*Poetaz*); *Canarybird* (*Poetaz*); *Gloria* (*Poetaz*); *Orange Cup* (*Poetaz*); *Sulphurine* (*Poetaz*); *Caedmon* (*Poeticus*); *New Foundling* (*Polyanthus*); *Soleil brillant; Apricot Phœnix; sulphureus plenus; grandiflora erecta; Seedling* 179; *Tulips "Couronne d'Orange"; Orange Imperator* (brownish-orange); *Peach Blossom* (dark rose); *Gele Dalk* (an early single variety with yellow flowers; *L'Espérance* (reddish-violet); and *Snowdon* (white).

MANCHESTER AND NORTH OF ENGLAND ORCHID.

MAY 15.—*Committee present:* Rev. J. Crombleholme (in the chair), Messrs. J. Cypher, Dr. Hartley, J. Lupton, D. McLeod, C. Parker, G. Weatherby, A. Warburton, and H. Arthur (Secretary).

A. WARBURTON, Esq., Haslingden (gr. Mr. Dalgleish), exhibited a group of choice varieties of Odontoglossum crispum. (Silver-Gilt Medal.) A large Silver Medal was awarded to Col. J. RUTHERFORD, M.P., Blackburn (gr. Mr. Lupton), for a miscellaneous group. Other exhibitors included Rev. J. CROMBLEHOLME, Clayton-le-Moors (gr. Mr. Marshall); Mr. J. STOTT, Radcliffe; Mr. J. BIRCHENALL, Alderley Edge; and Mr. W. SHACKLETON, Great Horton.

AWARDS.

AWARDS OF MERIT.

Cymbidium Gottianum (insigne × eburneum), *Laelio-Cattleya Gloriosa* (Fascinator × Empress Frederick), both from Col. J. RUTHERFORD.

Odontioda Schroderiana "Highfield" variety (crispum × Bradshawæ), from Mr. W. SHACKLETON.

LAW NOTE.

WHAT IS A SMALL LANDHOLDER?

AN interesting case under the Small Landholders Act is at present receiving consideration in a case that came before the Scottish Land Court on May 31. The applicant, Mr. Jas. Kerss, Bankhead, Denny, claims to be a landholder or statutory small tenant, and wishes to have his rent fixed accordingly. The respondents, the trustees of the late Thos. Anderson, maintain that the application is not valid, as Kerss is a market gardener. Mr. Kerss stated that he leased four acres of land, which was in grass, and that he broke up about three acres. About half an acre was planted with fruit, and the remainder with Oats, Potatos, etc. He also kept poultry, and worked as a jobbing gardener. He travelled about the country with a vegetable van, but what was sold in the van was bought in the Glasgow wholesale market. One of the trustees gave evidence to the effect that he considered that Kerss was a market gardener, and that Strawberries, Potatos and Cabbages were grown on the greater part of the ground. Other witnesses gave somewhat similar evidence. The judges intimated that they would inspect the farm at a later date.

THE WEATHER.

THE FOLLOWING SUMMARY RECORD of the weather throughout the British Islands, for the week ending May 31, is furnished from the Meteorological Office:—

GENERAL REMARKS.

Weather.—The general condition varied a good deal, but as a whole it was fine and dry over England and the east of Scotland, rather showery in Ireland and the west and north of Scotland. Thunderstorms were experienced in many localities, and were most general on the 29th and 30th. Locally, they were accompanied by heavy hail. A good deal of sea fog prevailed at times on the west and south-west coasts.

Temperature exceeded the normal, except in Ireland N., where it was a small portion of a degree below it. In England E., the excess amounted to as much as 8.6°, and in England S.E. to 6.1°, but in Scotland W. and Ireland S. it was less than 1°. Over England and Ireland, the highest of the maxima were recorded very generally on the 26th and 27th, but over North Britain they occurred more commonly on the 30th. The actual readings ranged from 81° in England S.E., the Midland Counties, and England E. and S.W. to 73° in Scotland W. and Ireland S., and to 72° in Scotland N. The lowest of the minima were recorded on rather irregular dates, and ranged from 34° in Scotland E. to 45° in England S.E. and 46° in England E. The lowest grass readings were 29° at Crathes and Markee Castle, and 31° at Balmoral and Glasgow. The temperature of the soil at a depth of 1 ft. was above the normal over the greater part of the Kingdom, but at a depth of 4 ft. it was generally below it.

Bright Sunshine was above the normal in England E. and S.E. and the Midland Counties, and equal to it in England S.W. and the English Channel; elsewhere it was below it. The percentage of the possible duration ranged from 64 in England S.E., and 55 in England E. to 31 in Scotland E. and over Ireland. and to 24 in Scotland N. In England S.E. the daily duration was as high as 10.2 hours.

Barometer and Wind.—During the early days of the week an anticyclone system extended over these islands from the Continent, and the wind was generally light and variable over the southern districts, and south-west to west in the north. By Thursday, however, a shallow depression had passed over England, and subsequently, while depressions from the Atlantic spread over the Kingdom, bringing a south-westerly to westerly current of wind, local irregularities of pressure were developed over England, causing thunderstorms in many localities. On Friday the southerly wind increased to the force of a gale, for a time in some of the western and south-western districts.

THE WEATHER IN WEST HERTS.

Week ending June 4.

Another very hot week for the time of year.—The present spell of unseasonably warm weather has now lasted nearly a fortnight. During that period the temperature in the thermometer screen has exceeded 70° on eight days, and on the warmest of those days reached 79½°. The night temperatures have not been so exceptionally warm as the days, and on three nights the exposed thermometer fell respectively to 37°, 31°, and 35°. Both at 1 foot and 2 feet deep the ground is now 3° warmer than is seasonable. Rain fell on two days, but the total measurement only amounted to about ¼in. During the last four weeks less than ¾in. of rain has fallen. A little rainwater came through the bare soil percolation gauge on one day, but with this exception no measurable quantity has passed through either gauge for three weeks. The sun shone on an average for 8½ hours a day, or for 2¼ hours a day longer than is usual at the end of May. On three days the record of bright sunshine exceeded 11 hours. Light airs and calms alone prevailed during the week, the direction of the light airs being exclusively from some southerly point of the compass. The mean amount of moisture in the air at 3 p.m. fell short of a seasonable quantity for that hour by 6 per cent. A large bush of the wild Dog Rose growing in my garden came first into flower on the 2nd, or two days earlier than its average date for the previous 27 years, but three days later than last year. *E. M., Berkhamsted, June 4, 1913.*

GARDENING APPOINTMENTS.

Mr. F. W. DAVIS, for 4 years Inside and Decorating Foreman at Leonardslee Gardens, as Gardener to EDGAR WIGAN, Esq., Godstone Court, Surrey.

Mr. J. KETTLEY, for the past 18 months Foreman at Angerton Gardens, Morpeth, as Gardener to H. WESTMACOTT, Esq., Benridge Hall, Ponteland. Northumberland.

Mr. HARRY SMITH, for 4½ years Gardener to GEORGE DANCE, Esq., and for 1 year at The Holme, Regent's Park, also at Lymes Holme, Stanmore, as Gardener to Lieut. M. A. KENNARD, R.N., Beoley Hall, Redditch, Worcester.

Mr. J. B. DAVIES, for the past 3 years Gardener to E. A. V. STANLEY, Esq., The Manor, Brigstock, Thrapston, Northamptonshire, as Gardener to the Earl of DALKEITH, Boughton House, Kettering, Northamptonshire. [No charge is made for inserting these appointments; we have placed the postal order for 1s. 6d. in the R.G.O.F. box.—EDS.]

Mr. W. MCILWRICK, for the past 3½ years Foreman at Frognal, Sidcup, Kent, as Gardener to Sir HENRY BUNBURY, Bart., The Manor House, Mildenhall, Suffolk.

Mr. A. B. SPOTTISWOOD, for the past 18 months Inside Foreman at Marlands, Itchingfield, Sussex, and previously at Bayfordbury, Henham Hall, Albury Hall, and Joyce Grove Gardens, as Gardener to H. G. LATILLA, Esq., Marlands, Itchingfield. [Thanks for 2s. for R.G.O.F. box.—EDS.]

MARKETS.

COVENT GARDEN, June 4.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general averages for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—EDS.]

Cut Flowers, &c.: Average Wholesale Prices.

	s.d.	s.d.
Arum (Richardias)	2 0	2 6
Carnations, per dozen blooms, best American varieties ...	1 9	2 0
— smaller, per doz. bunches...	15 0	18 0
— Carola (crimson), extra large	3 0	4 0
— Malmaison p. doz. blooms:		
— — pink	4 0	6 0
Cornflower, blue, per doz. bunches	1 3	1 6
— pink	2 0	2 6
— white	2 0	2 6
Eucharis, per doz.	2 6	—
Forget-me-nots, per doz. bunches	2 0	2 6
Gardenias, per box of 15 and 18 blooms... ...	1 6	4 0
Gerberas, per doz. blooms... ...	1 0	1 6
Gladiola, Akerman	8 0	9 0
— The Bride ...	8 0	10 0
— Blushing Bride	6 0	8 0
— Ne Plus Ultra, per doz. spikes	1 0	1 3
— Peach Blossom	7 0	10 0
Gypsophila, white	3 0	6 0
— pink	3 0	4 0
Iceland Poppies, per dozen bunches ...	2 0	2 6
Iris, Spanish, per dozen bunches	6 0	9 0
Lilium auratum, per bunch ...	4 0	4 6
— longiflorum, per doz. long	1 0	1 3
— — short ...	1 0	1 3
— lancifolium album, long ...	2 0	—
— — short ...	2 6	—
— — speciosum		
— rubrum, per doz., long ...	2 0	—
short ...	1 0	1 3
— candidum, per bunch long ...	1 3	1 6
per doz. short	1 0	1 3
Lily of the Valley, per dozen bunches:		
— extra special..	15 0	18 0
— special... ...	10 0	12 0
— ordinary ...	9 0	10 0
Mignonette, per doz. bunches ...	5 0	6 0
Orchids, Cattleya, per doz. ...	9 0	10 0
— Cypripedium	3 0	—
— Odontoglossum crispum ...	4 0	—
Pæonies, per doz. bunches of 6 blooms... ...	6 0	8 0
Pancratiums, per doz.	2 0	2 6
Pelargoniums per dz. bunches white	4 0	5 0
double scarlet	6 0	8 0
Pinks: white, Her Majesty, per doz. bunches...	2 0	2 6
Pyrethrum: single coloured per dozen	2 0	2 6
— double white	2 0	3 0
Roses: Caroline Testout ...	1 6	2 0
— Catherine Mermet	1 0	1 6
— CountessDerby	2 6	3 6
— Frau Karl Druschki	2 0	3 0
— Général Jacqueminot ...	1 6	1 6
— Innocence ...	2 0	2 6
— Joseph Lowe.	1 6	2 0
— Kaiserine ...	1 6	3 0
— Lady Hillingdon	1 0	1 6
— Liberty ...	1 0	3 0
— Madame A. Chatenay ...	1 6	3 0
— Maryland ...	1 0	1 6
— Niphetos ...	1 0	1 6
— President Carnot	2 0	2 6
— Prince de Bulgaria	3 0	4 0
— Richmond ...	1 0	2 6
— Rose Queen ...	3 0	4 0
— Sunburst ...	1 6	3 0
— Sunrise ...	1 0	1 3
— W. A. Richardson	1 0	1 6
Spiræa, per doz. bunches ...	5 0	6 0
Stephanotis, per 12 spray	1 3	1 6
Sweet Peas, per dozen bunches:		
— white ..	3 0	8 0
— coloured ...	3 0	8 0

French Flowers: Average Wholesale Prices.

	s.d.	s.d.
Lilac, white, per bunch	3 6	4 0
Stattice, mauve ...	3 0	4 0
Marguerite, yellow, per dozen bunches ...	1 9	2 0

Cut Foliage, &c.: Average Wholesale Prices.

	s.d.	s.d.
Adiantum Fern (Maidenhair), best, per doz. bunches ...	3 0	4 0
Agrostis (Fairy Grass), per doz. bunches ...	2 0	4 0
Asparagus plumosus, long trails, pr. ½doz.	1 6	2 0
— medium, doz. bunches ...	12 0	18 0
— Sprengeri ...	10 0	12 0
Carnation foliage, doz. bunches...	3 0	—
Croton foliage, various, dz. bnchs.	12 0	15 0
Cycas leaves, artificial, per doz.	3 0	12 0
Eulalia japonica, per bunch ...	1 0	1 6
Moss, gross bunches	6 0	—
Myrtle, doz. bnchs. (English), small-leaved ...	6 0	—
— French... ...	1 0	—
Smilax, per bunch of 6 trails ...	1 0	1 3

Plants in Pots, &c: Average Wholesale Prices.

	s.d.	s.d.
Aralia Sieboldii, dozen	6 0	7 0
Araucaria excelsa, per dozen ..	18 0	21 0
Asparagus plumosus nanus, per dozen	10 0	12 0
— Sprengeri ...	8 0	9 0
Aspidistra, p. dz., green	21 0	30 0
— variegated ...	30 0	60 0
Cacti, various per tray of 15's ...	4 0	—
— various, per tray of 12's ...	5 0	—
Cinerarias, p. doz.	8 0	9 0
Coleus, in pots, per dozen, 60's	6 0	12 0
— larger, each ...	2 6	10 6
Croton, per dozen	18 0	30 0
Cyperus alternifolius, p doz.	5 0	6 0
— laxus, per doz.	4 0	5 0
Dracæna, green per dozen ...	10 0	12 0
Ferns, in thumbs, per 100... ...	8 0	12 0
— in small and large 60's ...	12 0	20 0
in 48's, per doz.	6 0	—
Ferns: choicer sorts per doz. ...	8 0	12 0
— in 32's per doz.	10 0	18 0
Ficus elastica, per dozen	9 0	12 0
— larger, each ...	7 0	9 0

Plants in Pots, &c.: Average Wholesale Prices (cont.)

	s.d.	s.d.
Geonoma gracilis, 60's per dozen	6 0	8 0
— larger, each ...	2 6	7 6
Heliotrope... ...	7 0	8 0
Hydrangeas, white	12 0	18 0
— pink	9 0	15 0
— blue	12 0	30 0
Kentia Belmoreana, per dozen	5 0	42 0
— Fosteriana, 60's, per dozen	4 0	6 0
— — larger, per dozen... ...	18 0	63 0
Latania borbonica, per dozen ...	12 0	30 0
Lilium lancifolium rubrum per dz.	13 0	21 0
Lilium lancifolium alba, dozen ...	18 0	21 0
Lilium longiflorum per dozen ...	15 0	18 0
Lily of the Valley	18 0	21 0
— 48's, per doz....	21 0	30 0
Marguerites, in 48's per doz., white	8 0	10 0
Mignonette ...	7 0	8 0
Pandanus Veitchii, per dozen ...	36 0	48 0
Pelargonium ..	10 0	12 0
Pelargonium (Geranium), double scarlet, 48's ...	4 0	5 0
— other varieties	5 0	6 0
— — 48's various	4 0	6 0
— — 60's various	2 0	2 6
— — Ivy-leaved	6 0	10 0
Phœnix rupicola, each	2 6	21 0
Rambler Roses, ea.	6 0	15 0
Rodanthe	5 0	6 0
Saxifraga pyramidalis	15 0	18 0
Spiræa japonica, per dozen pots	6 0	8 0
— pink	10 0	12 0
Stocks, all colours	8 0	10 0
Verbena Miss Willmott, 48's, per dozen	8 0	9 0

Fruit: Average Wholesale Prices.

	s.d.	s.d.
Apples, French Russets, box ...	10 6	11 6
— Australian and Tasmanian		
— Australian case	12 6	15 6
— Cooking varieties, per case...	12 6	15 0
— Cox's Orange Pippin, cases...	18 0	24 0
Apricots, per box...	1 6	4 6
Bananas, bunch:		
— Doubles ...	8 6	11 0
— No. 1	7 0	8 0
— Extra	9 0	10 0
— Giant	12 0	14 0
— Loose, p. doz.	0 6	1 6
— Red coloured...	4 6	5 6
— Jamaica, pr ton	£9	£12
— Jamaica Ordinary, per box (9 doz.)... ...	5 0	5 6
Cherries, French, per ½ bushel ..	11 0	13 0
— per strike ...	6 6	8 6
— per Boxes ...	2 0	3 6
Cranberries, p. case	9 0	9 6
Dates, per dozen ...	2 9	3 0
— Egyptian, cwt.	25 0	—
Gooseberries, per ½ bushel... ...	8 0	9 6
— per peck ...	4 0	5 6
Green Figs ...	1 6	10 0
Grape Fruit, case:		
— 96's	16 0	22 0
— 80's		
— 64's		
— 54's		
Grapes:		
— Australian, per case	26 0	33 0
— English:— Canon Hall Muscat... ...	4 0	10 0
— Muscat of Alexandria ...	4 0	10 0
— Black Hamburgh, per lb. English ...	1 6	3 0
— Belgian, per lb.	1 6	2 6
Limes, per case ...	5 0	6 0
Lemons, Messina, per case ..	13 6	31 0
Naples, p. case	24 0	3 0
Lychees, 1 lb. box	1 6	—
Mangoes, Cape, dz.	6 0	8 0
Melons English, each	2 0	3 0
— Guernsey ...	2 0	3 0
French Canteloupe melons, each...	12 0	16 0
Nectarines, doz. ...	4 0	24 0
— Belgian ...	4 0	12 0
Nuts, Almonds, bag	52 6	—
— Brazils, cwt. ...	54 0	62 0
— Spanish, sack	40 0	42 6
— Barcelona, bag	35 6	36 0
— Cocoanuts, 100	18 0	23 0
— English Cobs, per lb.	0 3	0 4
— Chestnuts, bg.	14 0	26 0
— Walnuts, French, p.cwt.		
— Naples, p. cwt.	64 0	—
Oranges:		
— Tangerines ... (96s.) box	6 6	—
— Seville, sours, case	18 0	20 0
— Messina, bitters, case ...	8 0	9 6
— Jaffa, per case	8 6	9 0
— Murcia... ...	13 6	21 0
— Denia, per case	24 0	38 0
— Palermo Blood	9 0	10 0
Peaches, English, dozen	4 0	21 0
— Belgian, dozen	4 0	12 0
Pears:		
— Tasmanian, case	10 0	12 0
— per bundle of 3 boxes... ...	15 0	20 0
Pineapples, St. Michael ...	3 6	4 6
Rhubarb, doz. bndl.	1 3	2 0
— Natural, tally	12 0	15 0
Strawberries, p. lb.	2 0	4 0
— Second quality	1 0	2 0

Vegetables: Average Wholesale Prices.

	s.d.	s.d.
Asparagus, English special quality, per bundle ...	3 0	6 6
— English, per bundle... ...	1 6	2 6
— ½ bundles ..	0 5	0 6
— Sprue, bundle	0 6	1 0
— Cavaillon ...	0 9	10
— Victoria ...	2 6	3 0
— Toulouse ...	1 9	2 0
Artichokes (Globe), per dozen ...	1 0	2 0
— ground, ½ bus.	1 6	—
Batavia, per doz....	2 0	—
Beans:		
— Guernsey, lb.	0 9	1 0
— English, per lb.	0 9	1 0
— French, brd. pad	3 6	4 0
Beetroot, p. bshl.	1 0	2 0
— bags	3 0	3 6
Broccoli, bushel	1 0	1 6
— bags	1 9	2 0
— Heads, p. dozen	2 6	4 0
Cabbages, p. tally	4 0	—
— per doz. ...	1 0	1 6
Carrots (English) pr. doz. bun....	4 0	6 0
— French, dozen		
— Round	5 0	6 0
— Long ...	10 0	
— unwashed, per bag ...	2 0	2 6
— washed, bag ...	3 0	—
Cauliflowers, per doz.	2 6	4 0
Celeriac:		
— French, p. doz.	4 0	4 6
Chicory, per lb. ...	0 2	0 4
Cucumbers, per dozen	3 6	4 6
Endive, per dozen	2 0	2 6
— French, p. doz.	3 0	3 6
Greens, per bushel	1 0	1 6
— bags	2 0	—
Garlic ... strike	2 6	—
Horseradish, 12 bundles ...	10 0	12 0
Leeks, per doz. ...	2 0	2 6
Lettuce, French, Cos, per dozen	4 0	5 0
— English, Cos, per doz.	1 6	2 0
Lettuce, English round, p. doz.	1 0	1 3
— Dutch, per doz.	10	1 0
Marrows, dozen ...	4 0	5 0
Mint, per dozen bunches ...	3 0	5 0
Mushrooms, cultivated, per lb.	10	1 0
— Broilers ...	0 6	0 7
— Outdoor per lb.	0 4	0 6
Mustard and Cress, per doz. punnets	0 10	1 0
Onions (English), per bag ...	4 0	4 6
— per bushel ...	1 6	2 0
— picklers, per ½ bushel ...	2 6	3 0
— (spring), per doz. bunches...	2 0	3 0
— (Spanish), case	7 0	7 6
— Dutch, bags ...	3 6	—
— Egyptian, bags	5 0	5 6
— — cases ..	7 6	—
Peas, English p. lb.	1 0	1 3
Guernsey ...	1 0	1 6
— French, pad of 10 lb. ...	5 0	6 0
— Guernsey, p.lb.	1 0	1 3
Parsley, per doz. bunches ...	3 0	4 0
Parsnips, per bag	2 0	2 6
— per bushel ...	1 6	—
Radishes (French), per dozen ...	1 6	2 0
— English, p. doz.	10	1 3
— Guernsey ...	0 9	1 0
Sage, per dozen ...	2 0	—
Seakale, outdoor, box, 12 lbs. ...	2 0	2 6
Spinach, p. bushel	2 0	2 9
Scotch Kale, bushl.	1 0	1 3
Tomatos, English, per dozen lbs.	5 6	6 0
Tomatos, *continued*—		
— Seconds, per dozen lbs. ...	2 0	2 6
— Guernsey, per dozen lbs. ...	4 0	5 0
Thyme, per dozen bunches ...	1 6	2 0
Turnips (English), per dozen bunches ...	2 0	3 0
— bags	3 0	—
— French, long, dozen	8 0	9 0
— round, dozen ..	2 0	3 0
— unwashed, bag	2 0	3 6
Watercress:		
— dozen	0 5	0 6

REMARKS.—Supplies of Colonial Apples and Pears received this week amounted to 50,000 cases, the bulk consisting of Apples, principally of dessert varieties. Black and White Grapes are arriving from Australia in a good condition, packed in cork dust, in cases containing 30 to 36 lb. net. Grapes from home growers, the Channel Islands and Belgium are an increasing supply. There are sufficient bunches of Muscats of Alexander and Canon Hall Muscat to meet the demand. Peaches and Nectarines have been a good supply during the past week; the fruits have included some of very fine quality. There has been a brisk demand for English and Guernsey Melons, particularly for the Canteloup variety. Selected fruits of Green Figs have been scarcer during the past week. Forced Strawberries will be more plentiful daily until the outdoor crops are available, which will be later than usual this season. There has been a shortage in the supply of Continental Cherries and Apricots. Oranges and Lemons are scarce and dear. Gooseberries have shown a decrease in the supplies, but Tomatos become more plentiful daily. The earliest outdoor Peas have been marketed this week. Asparagus continues very plentiful. Ordinary Vegetables, with the exception of a few kinds, are sufficient for the demand.—*Edgar H. Rides, Covent Garden, June 4, 1913.*

Potatos.

	s.d.	s.d.		s.d.	s.d.
Blackland, per cwt.	4 3	4 9	Belgian, per bag	4 6	5 9
Evergood ,,	4 0	5 0	German ,,	5 0	6 0
King Edward ,,	5 0	5 6	Dunbar ,,	7 6	—
Dutch, per bag ...	3 6	4 6	Scotch (grey soil) ,,	5 6	6 0

New Potatos.

	s. d.	s. d		s. d.	s. d.
Cherbourgs, p.cwt.	10 0	11 0	St. Malo, per cwt.	12 6	13 6
Jersey ,,	13 0	14 0	Spanish ,,	10 0	11 6
Lisbon, per case	5 0	—	Teneriffe ,,	10 0	11 6

REMARKS.—Supplies of Old Potatos are nearly finished, and their prices are firm, which also applies to New Potatos, of which there are only small supplies at present. —*Edward J. Newborn, Covent Garden and St. Pancras.*

SCHEDULES RECEIVED.

Yorkshire Flower Show and Gala.—To be held in the Bootham Park, York, on Wednesday, Thursday and Friday, June 18, 19 and 20. Secretary, Mr. Fred Arey, Davyhall Chambers, York.

Baltic Rose and Sweet Pea Society.—The seventh annual Show will be held at the Merchants' Hall, 24, St. Mary Axe, London, on Tuesday, July 8. Secretary, Mr. A. T. Short, 24, St. Mary Axe, London.

Bath Gardeners' Debating Society.—The ninth annual Chrysanthemum Show will be held on Wednesday and Thursday, November 5 and 6, at the Grand Pump Room and Promenade, Bath. Secretary, Mr. J. D. Halliburton, Royal Victoria Park, Bath.

Obituary.

DANIEL HILL.—We regret to record the death on May 29 of Mr. Daniel Hill, of "Herga," Watford. The deceased gentleman, who was 69 years of age, had been in failing health for some time. Mr. Hill was for many years hon. secretary of the St. Andrew's Flower Show, Watford. He was keenly interested in hardy flowers and fruit, and his beautiful gardens at "Herga" were a source of unfailing pleasure to himself and his many friends. As a member of the Hertfordshire County Council, the Higher Education Committee, the Watford School of Science and Art, and the Hertfordshire Natural History Society, Mr. Hill was always foremost in promoting horticultural education and natural history study. He leaves one son and one daughter, the former being Mr. Arthur W. Hill, M.A., Assistant Director of the Royal Botanic Gardens, Kew.

GEORGE MCKINLAY.—It is with great regret that we record the death of Mr. McKinlay, who was for a long period head gardener at Wrest Park, Bedfordshire. Our readers may recall that we gave a description of the beautiful gardens of which he was in charge in our issue for June 16, 1900 (p. 373 *et seq.*). Wrest Park is the property of Earl Cowper, but has for some years been [illegible]

by him to the American Ambassador, lately retired. The gardens are some of the most beautiful in the country, and well repaid the care bestowed upon them by Mr. McKinlay. Every department received minute attention, although the ground under his supervision amounted to 150 acres. Some extent of the flower gardening at Wrest may be gathered from the number of plants Mr. McKinlay raised annually, as, for instance, 5,000 Zonal Pelargoniums, 3,000 Verbenas, 1,500 Dwarf Marigolds, 7,000 Ageratums Imperial Dwarf, 2,000 Tropæolums, 6,000 Iresine in variety, 2,000 Lobelias in variety, 1,600 Alternantheras, 300 Cannas, 1,000 Coleus, 600 Calceolarias, 600 Dahlias, 500 autumn-flowering Chrysanthemums, 1,500 Pyrethrums, also Heliotropes, Hollyhocks, lemon-scented Verbenas, and many hardy and half-hardy annuals. He took much interest in hardy fruit cultivation, and for many years past exhibited regularly at the Edinburgh shows of the Royal Caledonian Horticultural Society. Mr. McKinlay was formerly head gardener at Lamport, the residence of the late Sir Chas. Isham, and renowned for the extraordinary rockery Sir Chas. Isham built mainly with his own hands (see *Gard. Chron.*, Sept. 25, 1897, Figs. 62-64).

GEORGE HEMMING.—It is with regret that we record the death of Mr. George Hemming, head gardener at the Alexandra Park, London, N., which took place on May 31. Mr. Hemming was a keen and enthusiastic gardener from an early age, and was especially interested in the culture of decorative plants. He was superintendent of the gardens at Alexandra Palace for more than nine years, and previous to that charge he was superintendent of the Sheffield Public Parks. He was born in 1848, and was thus sixty-five years of age.

ALEXANDER L. DON.—We learn from our American contemporary, *Horticulture*, of the death of a well-known New York seedsman, Mr. A. L. Don, which took place on May 8 at the age of 58. Mr. Don was a native of Scotland, but emigrated to America at an early age, where he became highly successful. He leaves a widow and three sons.

WILLIAM EWING.—The *American Florist* records the death of Mr. William Ewing, head of the well-known firm of seedsmen and florists in Montreal Mr. Ewing had lived in Montreal for fifty years, but he was born in Scotland. He was sixty-nine years of age.

JAMES FRASER.—The American *Florists' Exchange* reports the death on May 5 of Mr. James Fraser, a native of London. He was a well-known florist, and since 1889 he had been Superintendent of the Kalamazoo (Mich.) Cemetery, where he lived up to the time of his death.

Answers to Correspondents

ABNORMAL DAISY: *Bulbo.* The flower-head shows prolification, and exhibits the condition known as Hen and Chicken Daisy.

ASPARAGUS UNHEALTHY: *W. V.* The injury is caused by the Asparagus fly. Nothing can be done at present to prevent further injury except to cut away and burn all injured stems. During the winter, roots showing injury should be dug up and burned.

ASPIDISTRA UNHEALTHY: *A. Handy.* Your Aspidistras are attacked by Lipura ambulans, one of the spring-tail insects. Soot and lime worked well into the soil form one of the most efficient remedies. The insects are most prevalent in damp soils and during wet seasons.

BOOK: *E. S.* Either of the following works will be suitable for your purpose: *Pictorial Practical Tree and Shrub Culture*, by Walter P. Wright and William Dallimore: Paper 1s. 3d., cloth 1s. 9d. *Beautiful Flowering Trees and Shrubs for British and Irish Gardens*, by John Weathers: price 5s. 4d. *Hardy Ornamental Flowering Trees and Shrubs*, by A. D. Webster: price 3s. 10d. The books may be obtained from our publishing department. The prices include postage.

CARNATION FOLIAGE: *H. C. M.* The injury is caused by insect punctures. There is no fungus present.

CERATOPOGON VARIUS: *A. Campbell.* The life-cycle of the midge Culicoides, or Ceratopogon varius has apparently not been worked out in detail, but is probably similar to that of C. bicolor. In the case of the latter species the eggs are laid 100 or more at a time in star-shaped clusters among the confervæ at the surface of ponds. The larvæ, which are long and slender, and possess no limbs, abound in the latter part of the summer. They move in a serpentine way through the water, while the pupa, which appears in May or June, swims on the surface, and can attach itself to floating objects by means of spines at the extremity of the abdomen. Some other species of Ceratopogon are, however, known to live in the early stages under the bark of decaying or wounded trees.

FRENCH BEANS: *W. B.* The warts are caused by Eelworms. The soil should be treated with lime when the crop is removed.

GOOSEBERRIES DISEASED: *B. T., Seaford.* The fruits are affected with the American Gooseberry mildew (summer stage). This Gooseberry disease was the subject of the Coloured Supplementary Illustration in the issue for December 7, 1912.

GOOSEBERRY SHOOTS: *P. M. K.* The plants are attacked by Botrytis cinerea. Spray them next season with the Bordeaux mixture at half the usual strength, commencing when the leaves are half grown. It is too late to spray this year.

MALFORMATION OF WALLFLOWER: *Enquirer.* The specimen sent exhibits in an unusually perfect manner the rare malformation characterised by the suppression of all the members of the flower except the sepals and pistils. Instead of the arrangement—normal to Wallflowers—of 4 sepals, 4 petals, 6 stamens and 1 pistil, the flowers of this monstrous race have 4 sepals and either 5 or 7 pistils. The petals are suppressed altogether, and only an occasional rudiment of a stamen is to be found. The cause of this and similar malformations is unknown. All that may be said is that the rudiments, which in the normal flower are destined to form petals or stamens, undergo some change—probably chemical in nature, and as a result of this change either fail to develop—as is the case with the petal rudiments—or are transformed into rudiments of pistils. The interest in the present specimen lies in this: that in ordinary cases of abnormal flowers, *e.g.*, Azalea, etc., stamen rudiments are changed so as to give rise to petals, whereas here they produce the female organs or pistils.

MOSQUITOES IN SHRUBBERIES: *W. Carr.* The only practical method of getting rid of the mosquitoes is to determine their breeding places and destroy the pests in their earlier stages. All mosquitoes pass part of their lives in water, and therefore all water-butts, barrels and other receptacles capable of holding water in the neighbourhood of the house should be viewed with suspicion. Those which are not absolutely necessary should be cleared, and the remainder either oiled or emptied once a week. Screening the receptacles with wire gauze (18 meshes to the inch) is also advantageous.

MULCHING WITH CHIPPED STONE: *Correspondent.* Stone-chippings do not hinder the warming of the soil; on the contrary, by the communication of their superior heat in sunny weather directly into the ground they raise the temperature of the soil. This is one reason why the roots of nearly all plants will search for and make more progress along the side of a stone—small or large—than in an open expanse of soil only. The soil, on the same principle, is more thoroughly aerated when top-dressed or bestrewn with stone. You may prove the truth of this if you lift a stone partially buried or lying on the surface of a grassy or peaty moor. Turned over there will be revealed a perfect mat of roots underneath probably, as well as along the sides of the place where the stone lay. One of the chief benefits of stone-chippings is that they prevent the soil "caking." The only injurious effect of grit or chippings is the shelter they afford sometimes to insects and slugs. Chippings 1 to 2 inches in size are too large for many reasons. The very best for the purpose are ½-inch pieces of serpentine or hard blue limestone chippings with a lump 1 to 2 inches in size here and there.

NAMES OF PLANTS: *W. and S.* Striga elegans.—*A. H. and Sons.* Scilla peruviana. *L. T. C.*—1, Hibiscus syriacus; 2, Geum rivale; 3, Dicentra eximia.—*P. G.* Pyrus lobata.—*E. S.* 1, Spiræa confusa; 2, Cercis Siliquastrum; 3, Cytisus Adamii; 4, Berberis Wallichii; 5, Wiegela rosea variegata; 6, Pyrus floribunda.—*J. M.* Claytonia perfoliata; Crepis biennis.—*Geo. M.* Tolmiea Menziesii.—*T. Newbould.* Luzula campestris. The Moss is probably a species of Polytrichum.—*A. B. C.* Orchis ustulata.—*Foreman.* 1, Masdevallia gemmata; 2, Rodriguezia secunda; 3, Oncidium triquetrum; 4, Brassia Lanceana; 5, Pleurothallis leptotifolia; 6, Oncidium pubes.—*R. T.* 1, Bulbophyllum suavissumum; 2, Cirrhopetalum elegantulum.—*H. O.* 1, Lastrea dilatata; 2, Pteris longifolia; 3, Pteris umbrosa; 3, Adiantum cultratum; 4, Adiantum formosum.—*B. B.* Bulbophyllum anceps.—*W. R. G.* Epidendrum radicans; the plant is not of any special value.—*S. G. E.* Fagus sylvatica var. heterophylla. The "cut-leaved" or "Fern-leaved Beech."—*S. W. T.* Orchis Morio var. flore pleno.—*W. K.* 1, Centranthus ruber, Red Valerian; 2, Potentilla Tormentilla; 3, Polygala vulgaris, Milkwort; 4, Pedicularis sylvatica, Lousewort.

STINGS BY GNATS AND MIDGES: *Co. Longford.* A number of different substances have been used to rub upon the skin in order to provide protection from the bites of mosquitos. Among these may be mentioned spirit of camphor, oil of peppermint, lemon juice, vinegar and oil of lavender. Citronella oil is largely used in America, and retains its power for several hours, and a mixture composed of 1 oz. oil of citronella, 1 oz. spirit of camphor, and ½ oz. oil of cedar has been found efficacious for the purpose in that country.

VINE LEAVES TURNING YELLOW: *H. S.* It is very improbable that the Tomatos growing in the vinery are responsible for the Vine leaves turning yellow and curling. If you suspect mildew as the cause you will find on p. 320 a reply to *T. T.* giving details for treating Vines affected with this disease. If you send specimens for examination we will determine if mildew is present.

WINTER-FLOWERING PLANTS: *A Dorset Gardener.* Any of the Galanthus species and varieties will succeed in your sandy soil, but they should be planted a little deeper than in the heavy soil in your former garden. For the stronger-growing kinds a depth of 6 inches will not be too much. Lime is not essential for the Cyclamens, but they will be benefited if some is applied. Chalk will do quite well. The best species for your purpose are Cyclamen coum, C. Atkinsii, and C. ibericum. The marbled leaves of C. neapolitanum are very pretty during the winter. If the soil is quite deficient in lime or chalk, varieties of Erica carnea may be recommended. E. mediterranea hybrida is also suitable. Unless mice are troublesome, some of the winter-blooming Crocuses should be included. C. vitellinus, the earliest varieties of C. chrysanthus, C. dalmaticus, C. etruscus, C. Imperati, C. Korolkowi, and C. Sieberi will bloom in the earliest months. We have found Colchicum Parkinsonii unreliable, but where the plant does well it flowers in winter. Other plants that will bloom early in the year include Adonis amurensis, Hyacinthus azureus, Synthyris reniformis, the rare little Heloniopsis breviscapa, which will survive the cold of ordinary winters; Christmas and the earlier Lenten Roses, Anemone blanda, Hacquetia Epipactis, Eranthis hyemalis, E. cilicicus, Iris reticulata, and I. histrioides.

Communications Received.—W. H. B.—T. H. R.—T. W.—E. D.—A. P. B.—A. W. D.—G. C.—P. W.—E. T.—Dublin—H. H.—Bulbo—A. F.—M. W.—W. B.—J. G.—R. A. R.—D. R. W.—G. E.—W. H. H.—H. W.—H. C., Belgium—T. E. W.—R. J. W.—R. P. B.—P. D. A., Bruxelles—W. S., Italy.

THE
Gardeners' Chronicle

No. 1,381.—SATURDAY, JUNE 14, 1913.

CONTENTS.

Actinidia chinensis ... 407
Africa, South, a National Botanic Garden for 404
American notes—
Scarcity of labour in America 408
Australian notes—
Lathyrus tingitanus... 408
Market gardening ... 408
Barrel, a reversible ... 404
Benevolent Institution, Gardeners' Royal ... 403
Books, notices of—
Austro-Hungarian Handbook on Trees and Shrubs 402
Cabbage, early 407
Chelsea Show, the ... 407
Elm, dangers of the ... 407
Flowers in season ... 404
Forestry, notes on ... 398
Fruit-buds not flowering and blossom withering 407
Fruit crops, the 407
Fruits, cultivated, history of 395
Horticulture, examination in 404
India, notes from ... 406
Irises, some rare ... 399
Kew notes 409
Law note 410
Leonardslee, plants in flower at 407
Lettuces, large 404
Nursery note—
Messrs. J. Piper & Sons, Barnes ... 408
Obituary—
Perry, Amos 410
Onion-growing in Australia 404
Fæonia Delavayi, Franch. 405
Potato crop, the ... 404
Rosary, the—
Cultural hints for June 396
Rose saw fly, the ... 407
St. Peter's Square, Hammersmith 404
Smith, Mr. A. C., presentations to 404
Societies—
Edinburgh Botanical 409
Edinburgh Royal Botanic Garden Guild 409
Ghent Horticultural 410
Horticultural Club ... 403
Linnean ... 404, 409
National Chrysanthemum 404
National Gladiolus ... 404
Royal Counties Agri. 410
Royal Horticultural 403
Scottish Horticultural 409
Tillage, the use of high explosives in 404
Tomatos, the culture of 398
Trees and shrubs—
A remarkable Hornbeam 397
Himalayan Rhododendrons in Cornwall 397
Tulip show, the National Society's 407
Week's work, the—
Flower garden, the... 401
Fruits under glass ... 401
Hardy fruit garden, the 401
Kitchen garden, the ... 400
Orchid houses... ... 400
Plants under glass ... 400
Public Parks and Gardens 400
West Indies, notes from the 406
Witloof Chicory, the cultivation of, in Belgium 405
Wolverhampton floral fête 404
Women's Agricultural Congress 404

ILLUSTRATIONS.

Hornbeam, a large tree of, at Manor House Park, Windover 397
Iris iberica var. ochracea 399
Mons, M. J. B., portrait of 395
Pæonia Delavayi 403
Perry, Amos, portrait of the late 410
Witloof Chicory, showing Belgian methods of cultivating the 405, 406

THE HISTORY OF CULTIVATED FRUITS

AS TOLD IN THE LIVES OF GREAT POMOLOGISTS.

WHETHER it be true or not that the history of a country is that of its great men, it is undoubtedly true that the history of progress in modern horticulture is told in the biographies of the resourceful few who, in advance of current practice and often in defiance of science, dared to try new experiments. In no department of horticulture is this truer than in that of pomology. Yet, strange as it may appear, no connected account exists of the several contributions made by the leaders in this art. The purpose of the present series of articles is to fill this gap in horticultural history.

Were the biographical studies appearing in book form, it would be necessary to arrange them in chronological order, but to do this does not appear to be essential in the present instance, and, indeed, to attempt it would entail a long and perhaps indefinite delay in publication. For each biography, if it is to be of permanent value, must be the outcome of considerable historical research. Such research is, by the nature of the case, both tedious and intermittent: tedious, because of the number of diverse documents and volumes which must be consulted; intermittent, because of the comparative rareness of opportunity for consulting the necessary authorities. No one, however, who is conversant with the history of pomology will take exception to the selection of Van Mons as the subject of the first contribution to the series.

J. B. VAN MONS (1765-1842).

The value of speculating is generally estimated by its use in co-ordinating facts hitherto unrelated. It has, however, another function, that of the stimulation of investigation, and in many ways this is perhaps its most valuable result, for, though the theory may fail, the new facts remain.

As an example of the latter result the work of Van Mons cannot be bettered. His theory caused the liveliest discussion in his time, and though it has been shown to be of little value, his experiments



J. B. VAN MONS.

gave an impulse to the study of new varieties, which resulted in the production of a large number of new and valuable fruits, many of which are widely appreciated to this day.

J. B. Van Mons was born at Brussels on November 11, 1765, his father being steward to the Beguine Sisterhood, so well known in Flanders. After a modest education, mainly classical, he started life as a chemist. As with many famous men, the end of his school days was the starting point of his education.

For those interested in physical science those were revolutionary times. Lavoisier had declared war on the "Phlogistic" theories, and young Van Mons threw himself into the fray with youthful zest. His first publication, *Essais sur les Principes de la Chimie Antiphlogiste*, sufficiently indicates the side which claimed his sympathy. He was soon on good terms with the great men of science, Lavoisier, Volta, Richter, Priestley, and others, and as was only to be expected, this took him from the retailing of drugs into more important positions.

His services were enlisted in the reorganisation of education in Belgium, and soon he was editing several scientific publications. But the revolt in Brabant in 1789 nearly brought his career to an early end. Arrested for his action with the revolutionists, he was condemned to death, and only escaped on the score of his youth.

Dumouriez' great victory at Jemmapes brought Belgium under the French empire, and from this date Van Mons' relations with the French scientists grew rapidly, and he was nominated member of the Institute of France at its establishment in 1796.

Science did not claim his whole attention. He was elected in 1792 representative in the Belgian Parliament; but his political career and his other varied interests are not the object of our study. They are mentioned only to show his many-sided character, and also to explain the attention and interest with which his botanical speculations were received by the scientific world.

His interest in pomological matters was first aroused by the hiring of a garden for the culture of Rhus radicans, a drug which was then being introduced into medicine. Here he made his first sowings of Pears from seeds taken from the popular varieties of the day, such as Beurré Gris and Vert Longue. The real beginning, however, of his theory was caused by the examination of some beds of seedling Roses in a neighbouring nursery.

A large number of Roses were here raised annually from seed, and from these plants seed was again collected and resown. Van Mons noticed that the most recent sowings had a much larger proportion of double flowers than the earlier ones. This set him thinking, and also working. Experiments with other flowers followed, and his earlier sowings of fruits coming into bearing added fresh material.

He now took a piece of ground in the suburbs of Brussels to test his speculations on a larger scale. It will be well here to set down briefly the postulates upon which the famous theory was based, and for the sake of brevity they may be stated in dogmatic style.

1. Fruits in the wild state do not vary when grown from seed—a crab will produce only crabs, etc.
2. There is a definite limit to the age of any variety of fruit, a period of improvement, stability, and decline.
3. The change of soil, climate, etc., caused by culture is the direct cause of variation, and variations once induced will continue in the offspring.

From these postulates it was easy to draw the conclusion that the improvement of cultivated fruits is possible if seed be taken at the right period in the age of the variety; that is, when it is in the up-grade. Seeds from ancient or worn-out varieties some hundreds of years old would produce only feeble and worthless offspring. Therefore, by sowing seed of newer varieties, taking their earliest seeds and again sowing them, and so on for many gene-

rations, the result would be an accumulation of up-grades, each of which would be so many added steps to perfection. This is, in a few words, the theory of Van Mons.

To prove this, seeds of wild species were taken and sown and re-sown for many years, and the best of each sowing selected at each generation, with the result that a sensible improvement was noted.

Any modern experimenter would at once ask at this juncture: Were the plants always strictly self-fertilised? The importance of this point was realised by Van Mons, and met in this way. Examining the young, unopened flowers, he noted that the stamens were folded against the pistil, and concluded that fertilisation took place before the flower opened. This is, of course, the error which renders all his speculations on this subject valueless, and it is curious that naturalists of such eminence as Poiteau, Quetelet, and even Darwin did not notice, or at least failed to comment on, this very vital point. The explanation is probably to be found in the fact that the book in which Van Mons gave a detailed account of his speculations (*Arbres Fruitiers, leur Culture en Belgique et leur Propagation par graine*, 1835) is for prolixity, repetition, and lack of arrangement probably unique in the history of horticulture. It has been doubted if anyone has ever read Milton's *Paradise Lost* from cover to cover; in the case of Van Mons' book the doubt approaches certainty.

It is evident, therefore, that the gradual improvement noticed in the seedlings was due to cross fertilisation with other good varieties existing in the experimental garden, coupled with selection of the most promising of each generation. Let us turn from the sad spectacle of theories dethroned to the happier sight of facts accomplished.

Van Mons spared no pains to collect all good varieties from such sources as were open to him, and these with his seedlings are said in 1815 to have reached the extraordinary number of 80,000. About this time two terrible calamities fell upon him: firstly, the death of his wife, and then an order to vacate his nursery in the depths of winter, to allow of the erection of gas works.

Having accepted the chair of Chemistry and Agriculture in the University of Louvain, he wished to move his nursery there, but fearing the jealousy of local nurserymen, and having so short a time at his disposal, only a small number —less than one-twentieth—of the trees were moved. Misfortunes in this case did not come even doubly. Scarcely had the new nursery been established when the French army, marching upon Antwerp, which had been seized by the Revolutionary Party, chose the new nursery for the site of the army kitchens. Van Mons, surveying the ruins of his trees after their departure, forms a pathetic picture.

Undaunted, however, he again took grafts and replanted such trees as had survived, and until his death in 1842 he was able to cultivate them in peace.

The new fruits which he raised were known first to the world at large by the publication of his *Catalogue* in 1823. In France, Poiteau, in Germany, Diel, were the first to make known the fame of his productions. In England, as an examination of the early *Journals* of the Royal Horticultural Society will show, the greatest interest was felt, and each new fruit was eagerly tested and reported upon.

Of the large number which he raised it will be obvious that but few exist at the present time; but those few take rank with the highest. The following are the best known of his seedling Pears:—

Belle Julie, Comte de Flandre, Doyen Dillen, Colmar d'Arenberg, Beurré Bosc, Conseilleur à la Cour, Grosse Calebasse, Leon Leclerc de Laval, Nouveau Poiteau, Nec Plus Meuris.

The last commemorated Van Mons' gardener, Meuris, a man born "avec la génie de pono-monie," and whose devotion to his work must have been of the greatest assistance to his master.

Though experimenting with many kinds of fruits it is evident the Pears were nearest to Van Mons' heart. Of the apples which he raised the best known is Baumann Reinette, named after the brothers Baumann, of Bolwyller, in Alsace, whose nursery at that time was a clearing-house for the horticultural world. The Plum Belle de Louvain is attributed to him, but with doubtful accuracy.

Having briefly summed up his work it may be of interest to catch a glimpse of the man. Van Mons, after his political wild oats had been sown, was of a retiring and reserved nature. He himself remarks upon the natural reticence of the Belgians, which had a result of a rather remarkable nature, and one which possibly affected Van Mons' work in no inconsiderable manner. The Abbé Hardenpont at Mons, in the years between 1730 and 1770, had raised Pears of the finest quality, probably by direct cross fertilisation; but these fruits were quite unknown outside a small district around Mons, and it was not until the latter years of Van Mons' life that he saw them. He regretted this deeply, as working from such perfected specimens he believed he would have attained a much higher standard.

This eagerness to collect good and little-known sorts is amusingly shown in the following incident described in his book which shows a capacity for special pleading which would have been valuable in certain walks of life. Taking an excursion with Meuris, he chanced on a very covetable Pear in a peasant's garden. Money was offered in vain, and he was not permitted even to gather grafts. But we must quote Van Mons himself:—"Quand nous ne pouvions obtenir ni l'un, ni l'autre, enlever à l'inaperçu une greffe aurait été faire un larcin; nous trouvions moins ignoble de voler l'arbre et nous fesions ce vol. L'un aurait été un acte qu'on pouvait cacher, l'autre devait devenir apparent. Il'y a la difference de tromper à violenter. Entre ceux le choix n'était pas difficile!"

We suspect the faithful Meuris was commissioned for this work; but to men of genius much is forgiven.

The latter years of Van Mons' life were cheered by the appreciation which was shown for his fruits in France, England and Germany, and after his death a worthy successor was found in A. Bivort, who removed Van Mons' seedlings to his own nursery, and figured and described many of the best varieties in his *Album de Pomologie*.

To sum up: the chief service of Van Mons to horticulture was the stimulus which he gave to the raising of new varieties of fruits, and the fact that so many of the best fruits of to-day were raised in Belgium and elsewhere soon after his death is a remarkable tribute to the success of his labours. *E. A. Bunyard.*

THE ROSARY.

CULTURAL HINTS FOR JUNE.

PARAFFIN is one of the best specifics for destroying insects which suck the juices of plants, such as the green fly; but this material requires great care in its use, and should be prepared as an emulsion. The preparation known as American paraffin-emulsion is suitable, and is prepared as follows:—Dissolve one quart of soft soap in two quarts of boiling soft water. Remove the liquid from the fire, and, whilst it is still boiling, add one pint of paraffin oil, and churn the mixture immediately with a small hand-syringe. The preparation should be diluted with ten times its bulk of salt water. If the liquid is kept well churned when it is used it will not injure the plants. I prefer paraffin-emulsion to nicotine extract, as I consider it is more effective. Paraffin soap may be purchased in cake form, and this also is an excellent insecticide. Another troublesome pest of roses is cuckoo spit (Philænus spumarius), and if there are only a few of the pests they may be got rid of by hand-picking. But where large numbers of Roses are grown it is advisable to use some kind of Tobacco wash. For Orange fungus, or red rust disease, paint the hard wood with methylated spirit diluted with its bulk of water. Thrips are usually found on the under sides of the leaves, and the plants should be sprayed well at night time to destroy them. Maggots are best dealt with by hand-picking, but this is almost impracticable where a large number of Roses are grown, and in this case I recommend Swift's paste as a remedy.

PREPARING FOR EXHIBITIONS.—If exhibition blooms are required, it is necessary to practise disbudding, take care that the bud retained is a perfect specimen. This precaution is especially necessary, as many of the early buds are developing green centres, the usual result of moderate pruning. The hybrid perpetual and other very double Roses are prone to develop this malformation, the variety Madame Isaac Perrier being one of the worst in this respect, and another old variety, Annie Wood, is also very prone to this defect. It is best to cut off the malformed flowers as soon as they are detected. I have a large plant of Dr. O'Donel Browne, which I decided to leave unpruned, and although there are some fine, big buds, many of them have green centres. As green-centred blooms are very seldom developed on plants that are hard-pruned, this is an additional reason why pruning is beneficial; and, moreover, I find that insects are never so troublesome on Roses that have been cut back severely. Intending exhibitors should see that the shades for protecting the blossoms during times of bright sunshine are in good order, for they will soon be required. The exhibition boxes may need overhauling, and perhaps repainting, and the present is a suitable time to undertake this work. If very large blooms are required feeding must be continued. Where liquid sewage and light soil are available, it is a good plan to draw a drill, as for Peas, on both sides of the plants at about 6 inches from their stems. The liquid fertiliser should be poured into the drills, preferably during the evening, and the drills afterwards filled with water. It is an advantage if the drills are watered the day previous with clear water. Where the means exist, it is a great advantage to have a special tank for holding such manures as I have named together with the drainings from the stable. These natural fertilisers are far safer to use than chemicals and are not so costly. If the soil in the beds and borders is caked on the top after wetting by rains it should be forked lightly. This may appear a small detail, but one may almost see Roses grow after it has been done. Should it be necessary to apply a mulch in order to conserve the moisture in the soil nothing is better for the purpose than spent hops, and, even on heavy soils, spent hops worked into the ground will add considerably to its fertility and furnish food. If chemicals are used I prefer either sulphate of ammonia or good guano.

STOCKS.—The shoots of standard Briars should be reduced to three, and these should be fairly close to each other, selecting the three strongest. Two of the shoots will be budded next July, and the top one left. Then, in case either of the two buds fail the third shoot may still be worked. I notice that stocks are very forward this season, and the budding may be commenced as soon as the shoots are moderately firm, selecting the buds, if possible, from indoor plants, or from pot plants of novelties recently purchased.

EARLY ROSES OUT-OF-DOORS.—Rosa Hugonis was in full bloom on May 23, while the common

China Rose, Carmine Pillar, R. Malyi, and the lovely little Polyantha Mieze were expanding their buds; whilst Conrad F. Meyer and its beautiful sport Nova Zembla, together with the beautiful variety Princess Pless, were showing colour. Beauté de Lyon is another Rose that will flower early if the plant is pruned hard, leaving only about 3 feet of the shoot. The colour of this Pernetiana variety is unique.

ROSES UNDER GLASS.

The present is a suitable time to plant Roses under glass. The soil should be prepared by digging it deeply, and enriching it with well-rotted manure and bone-meal. Young grafted plants in 5-inch pots are the best for the purpose, and they should be set 2 to 3 feet apart each way. Allow the plants all the light possible, and, for this reason, do not train climbers under the roof. Endeavour to maintain such conditions as obtain in vineries, that is plenty of sun-heat and atmospheric moisture, as these conditions favour growth so much that by October the plants will have grown into large specimens. The flower buds must be pinched out as they appear. Good forcing varieties are found in Richmond, Sunburst, Mrs. George Shawyer, Souvenir de Gustave Prat, Lady Hillingdon, and Madame Abel Chatenay. Some of the old shoots may be removed from the climbing Roses if this has not been done already, and the atmosphere kept rather close to favour the development of good growth for next season's blooming. There should be no lack of atmospheric moisture just now while the Roses are growing freely, but should the nights turn cold a little artificial heat must be provided.

Plants that have been forced may be hardened gently, placed out of doors afterwards, and repotted if the pots are filled with roots. If the roots have sufficient room for another season, it will be better to top-dress the plants next autumn, and defer the potting until another year. Roses that were potted last October, and plunged closely together, should be set out afresh, allowing plenty of room, and plunging each pot up to its rim. If the plants are well looked after in such matters as watering, etc., they will furnish splendid specimens for forcing next winter, and be far more suitable for the purpose than grafted plants, as they have a much stronger root system. *Experience.*

TREES AND SHRUBS.

A REMARKABLE HORNBEAM.

I send a photograph (see fig. 167) of an old Hornbeam growing in the park of the Manor House, Windover, Buckinghamshire. The Manor House is one of the most ancient residences in Buckinghamshire, and, judging by the appearance of the tree, one is justified in presuming that the Hornbeam is as old as the house itself. Whether this be so or not, the fact remains that it is a grand old tree, and is in an excellent condition of health. It would be interesting to know if there are larger specimens of Hornbeams in this country. Mr. and Mrs. Chas. S. Roath are proud of the old tree, and would be pleased to show it to anyone specially interested in old or historical trees. The height is 58 ft., spread of branches 72 ft., and girth of stem at 4½ ft. from the ground 12 ft. *Owen Thomas, V.M.H.*

[The tree is undoubtedly one of the finest Hornbeams in the country, not in height, but in spread of branches and in girth of trunk. The largest tree at Kew is 70 ft. high and 10 ft. in girth. The largest mentioned by Mr. Elwes in *The Trees of Great Britain and Ireland*, is at Cornbury Park, Oxford, 75 ft. high, 11 ft. 10 in. in girth of trunk, 95 ft. in spread of branches. Mr. Elwes' measurement is taken at 5 ft., whilst Mr. Roath's tree is 12 ft. at 4½ ft. from the ground. Therefore, it may be concluded that the girths of the two are nearly identical. There are very few clean grown Hornbeam trees in the country of greater girth than these—although pollarded or deformed trees may exceed these dimensions.—Eds.]

HIMALAYAN RHODODENDRONS IN CORNWALL.

Rhododendron Griffithianum, far better known as R. Aucklandii, is one of the noblest of our flowering shrubs. In the size of its blossoms, which sometimes measure over 5 inches in diameter, no species, except perhaps R. Nuttallii, can rival it, while trusses of as many as nine flowers are by no means uncommon. A large specimen, such as the Tremough plant, which exceeds 10 feet in height, is a glorious sight when in full bloom during the month of May, the hundreds of great white blossoms being exquisitely beautiful in their snowy purity. There is, however, considerable divergence exhibited in the colouring of the blooms of seedling plants, and many variations of tint may be noted by a visitor to different Cornish gardens while R. Aucklandii is in flower. In one form the pure white flowers have a carmine spot surrounding the base of their anthers. Such blossoms are borne by what is probably the finest example of R. Aucklandii in England, at Killiow, near Truro. This giant specimen, over 12 feet in height and 22 feet in diameter, was procured in 1864 as a small plant, and is thus nearly fifty years old. In some gardens bushes of R. Aucklandii bearing bright rose-coloured flowers are to be seen. This Rhododendron is admittedly the most beautiful of the family. The late Rev. Henry Ewbank, of Ryde, Isle of Wight, wrote of it some years ago as "the glory of the Himalayas, the cynosure of all beholders, the undoubted queen of all flowering shrubs."

One of the great drawbacks to this and some other species of Himalayan Rhododendrons is that they are tender, and can only be grown with confidence of success in exceptionally favoured localities in these islands. Mr. Ewbank lost two fine specimens of R. Aucklandii from frost at Ryde, a spot enjoying a comparatively mild climate. Shelter is the main desideratum, and where this is provided by surrounding trees many species may be successfully grown, even as far north as Scotland, especially on the west coast. It is, however, in Southern Cornwall that these tender Rhododendrons are to be seen to the best advantage, for there they grow luxuriantly and flower profusely year after year. R. Falconeri is a handsome species bearing trusses of white, closely-set, bell-shaped flowers in May. Its leaves, dark green above and brownish-yellow beneath, are very large, sometimes being 18 inches in length and 6 inches in width. It forms splendid specimens, one at Tregothnan having a height of 24 feet and a diameter of over 30 feet. This often bears over 1,000 bloom-trusses during the season. R. grande or argenteum is a fine flowering shrub bearing white blossoms, slightly tinted with pale green in the interior, about 3 inches in length, bell-shaped, with slightly spreading mouths, and having small blotches of deep purple at the base of each cup. These are borne in large clusters about 10 inches in diameter. The leaves are green with a silvery reverse. The largest specimen is probably that at Tregothnan, and is 18 feet in height. One year it bore over 300 bloom trusses. R. grande generally flowers towards the end of March, but some specimens bloom considerably earlier. R. campylocarpum bears pale yellow flowers in May, and is a most profuse



Fig. 167.—Hornbeam in the Manor House Park, Windover.
Height, 58 feet; spread of branches, 72 feet.

bloomer, the leaves being often entirely hidden by the blossoms. Shrubs 6 feet to 8 feet in height are not uncommon. R. barbatum and R. Thompsonii are two fine Rhododendrons bearing trusses of blood-red flowers. R. Shilsonii, a hybrid between the last two, but superior to either, raised at Tremough, also has bright red flowers over 2 inches across.

The finest collection of R. arboreum and its hybrids in England is to be seen at Tremough. These are at their best about the middle of April. Many of them are from 25 to 30 feet in height. One majestic specimen of R. arboreum roseum is 25 feet high and 30 feet through. The trunk of this giant divides a little way above the ground into three stems, one of which is 3 feet in circumference. R. arboreum album and R. a. cinnamomeum exceed 20 feet in height, and the latter species remains in flower for two months. Numerous beautiful hybrids have been raised at Tremough, one of the handsomest being Beauty of Tremough, a cross between R. Aucklandii and R. Thompsonii. The flowers are soft pink, and in form and size are midway between the two species. Another very fine variety Gill's Triumph, which has been called the scarlet Aucklandii, bears flowers of an intense red. Mrs. Henry Shilson bears enormous trusses of pink bells of large size, and some of the R. Thompsonii and R. barbatum seedlings are very lovely, one of the latter bearing conical trusses of rose-pink blooms with reflexed petals splashed with crimson. Of R. arboreum seedlings there are many of great merit, one flesh-tinted, another white with rose spots, and a third, light pink profusely spotted, with flowers 4 inches across, is particularly attractive. R. Nobleanum venustum is the earliest of the race to commence flowering, often being in bloom in October. In one or two gardens the large flowers of the superb R. Nuttallii, white with a primrose stain at the base of the cup and fully 5 inches in diameter, may be seen early in June, but this is a tender species and is generally grown under glass, even in Cornwall. The yellowish-white blooms of R. Dalhousiæ are also perfected in the open in June. The fragrant-flowered section, generally known as Greenhouse Rhododendrons are, as a rule, even in the south-west, grown against walls, but in the sheltered valley at Trebah they have formed great bushes in the open ground, R. fragrantissimum being over 7 feet in height, Countess of Sefton and Gibsonii, 6 feet by 6 feet, Lady Alice Fitzwilliam, 5 feet in height and R. exonensis 3 feet high and 5 feet through. Amongst other species often found in Cornish gardens are R. campanulatum, with pale lilac-pink flowers, R. ciliatum, flesh-coloured, R. cinnabarinum, bearing small long-tubed blossoms of purplish-red, with a grape-like bloom, R. fulgens, crimson-scarlet, and R. triflorum, yellow. The beautiful Pink Pearl, one of the most charming of all Rhododendrons in the lovely colour of its flowers, is also in many collections, but as it is of recent introduction the plants are not as yet of any great size, though some are 6 feet in height. *Wyndham Fitzherbert.*

FORESTRY.

SOME USES OF ENGLISH TIMBER.

TREES are usually converted into timber where they are felled, as they are difficult to transport whole. Before felling, a careful examination should be made, not only of the trees individually, but of the wood as a whole, lest by cutting too many in one place the landscape suffers. Felling should be done carefully, and the trees should not be allowed to fall too hard. Irreparable damage is often done to a trunk which is allowed to fall on the top of another, or down an incline; it becomes cracked, or "shaken" inside, and loses the greater part of its value as timber. The Oak and the Ash are two of the most useful timber trees. Oak trees should be selected with long, clean butts, and evenly and carefully felled. The next thing to do is to measure off the length required—say, for field gates. Ten feet is the usual length for this purpose; this should be cut off, and hewn up on two sides before being placed on the bench. A strip should then be taken off on either side with as little waste as possible; no sapwood, however, should be left on. It will then be apparent whether the butt will cut up more economically for bars than for backs; if so, it should be converted into the former, and the remaining portions cut up into gate-heads and heels, and braces. The Oak is also very useful for posts, and is only surpassed for this purpose by the Yew.

If the tree has a large top, some of the branches can often be used for posts. Posts 4 in. by 4 in. by 5 ft. are quite large enough for the purpose, and it is not essential for this purpose that all the sapwood be excluded. The Oak makes good timber for shafts, cart frames, and spokes; also for lintels and other fittings for houses. There is in fact no waste in the Oak, for the smallest strips can be used for estate repairs. Floor boarding and panelling are some of the first uses which occur to the mind for Oak timber, but in point of fact much of the wood thus used in ancient houses took years to become thoroughly seasoned, and French Oak is now chiefly used, being much less liable to crack than English.

The Ash is a very useful timber tree, and is unfortunately becoming very scarce. It has no equal for the making of waggon-shafts, cart and harrow frames, tool-handles, etc. For fencing purposes it is also admirable; the best way is to cleave it, not to saw it. This method certainly takes rather longer, and does not look quite so neat, but the poles last far longer than when sawn. *Arthur Gooding.*

TOMATO CULTURE.

THERE are now so many varieties of this fruit that it is difficult to make a selection; but for the sake of those who are unable, through want of time and space, to experiment, the six following varieties will be found amongst the best: — Fillbasket, Sunrise, Tuckswood Favourite, Lawrenson's III., Brooks' Freedom, and Holmes' Supreme. The seed should be purchased from a thoroughly reliable source, or the plants may not turn out true to name.

The seeds may be sown at almost any period, according to the season in which the fruit will be required. The soil should be a friable loam, with a little sand added if it is inclined to be heavy. It is a good plan to sterilise the soil about a month beforehand, and thus reduce the risk of disease. Almost any kind of pot or box will answer the purpose, but the ideal receptacle is a wooden box about three inches deep, and twelve to fifteen inches each way, with a few holes drilled in the bottom to allow of the escape of superfluous water. The box should be filled to within three-quarters of an inch from the top with soil, which should be pressed down rather firmly, thoroughly soaked with water, and then allowed to drain a short while before sowing the seeds. The latter should be put in separately, about an inch apart. It is important that at least this distance should be preserved between each seed, as the plants can then be left in the boxes until they have made a few rough leaves, and the risk of damping off is reduced. After sowing, the seeds should be covered with very fine soil passed through a quarter-inch riddle, and the box placed on a gentle bottom heat, with a sheet of glass over the top. After a few days the glass may be removed; and when the plants have made two or three leaves they may be potted singly in three-inch pots, in soil similar to that used for the seeds, with the addition of a five-inch potful of superphosphates and a three-inch potful of basic slag to each barrowful of soil. After potting they should be placed in an airy (but not draughty) position near the roof glass, in a temperature of 50° to 55°.

For pot plants the pots should be filled with clean loam, mixed with the quantities of superphosphate and basic slag given above, with a dusting of freshly slaked lime. A piece of crock should be placed over the hole at the bottom, and the pots filled with soil well rammed down. The soil should then be thoroughly saturated with water containing permanganate of potash in the proportion of one ounce to twelve gallons. When the soil is fairly dry the plants may be put in, if they are large enough—i.e., if they have already made a few roots round the inside of the three-inch pots from which they are to be transferred. The hole dug for the reception of each plant should only be slightly larger than the ball of soil round the root, and the soil should be pressed tightly down after planting. No water must be given until it is absolutely essential.

If the plants are to be grown in borders the ground will need special preparation. If the soil is deficient in humus, a light dressing of cow manure may be given. It should be dug in about a month before the border is to be used, and it is advisable to grow a crop of mustard or radishes in the soil before putting in the Tomatos, to carry off the excess of nourishment. The border must be saturated just before planting with the permanganate of potash solution advised for potting soil; this will moisten the soil and at the same time destroy any fungus spores which may be present. Here also firm planting is necessary to success.

If a spare frame is available no better use can be made of it than to plant Tomatos in it. The plants can be placed in a single row at the front of the frame and trained back over wires stretched across the glass about six inches beneath it. The better way, however, is to prepare the frame in the same way as the border, cover the soil fairly thickly with straw, and put the plants about eighteen inches apart all over the frame, just separating the straw so that it may not touch the plants.

Watering is an important and rather difficult point in the culture of the Tomato, and is the rock on which even experienced growers often come to grief. It is better to err on the side of dryness than on that of over-humidity; and even the "flagging" of the plants, which is usually taken as a sure sign that water is needed, is not infallibly so. The water for every alternate application should be coloured to a rosy pink shade with permanganate of potash as a safeguard against disease.

Staking is a matter which calls for careful attention. If the stakes have been used before they should be scalded or otherwise disinfected. They should be placed at a distance of at least three inches from the stem of the plant, so as to avoid the risk of injuring the main root. The raffia with which the plants are attached to the stakes must not be so tight as to prevent expansion. The best method of tying is to carry the raffia once round the stake about three inches above one of the joints of the plant, turn it round under the leaf, pull it fairly tight, and tie it behind the stake. As the plant grows the raffia will become more and more slack. The best method of training is by means of soft twine, tied to a short stake in the soil, and carried to a wire across the roof of the house. No tying will be needed if the leading point is kept growing straight up beside the twine, as the foliage will provide sufficient attachment.

The ventilation of the house should be constantly and carefully attended to, and the air always changed gradually, so as to cause no violent alternations of temperature. The top ventilators should first be opened when the sun begins to shine in the early morning. About an hour after the bottom ones may be opened a little way and the apertures gradually increased. Of course, on warm, still days the house can be thrown wide open, and after the end of May it should never be entirely closed during the night—the top ventilators on the lee side can be

left about an inch open. Between nine a.m. and three p.m. the house should never be shut completely at any time.

The training of Tomatos is now universally carried out on the single cordon principle, with an occasional double or treble cordon to fill up space. All the side shoots should be rubbed out as soon as they are large enough.

It will usually be found most convenient to train the plants in a diagonal direction at an angle of about 45°. By this means the largest number of fruits is secured, and the season of fruiting prolonged. On the point of stopping growers are a good deal divided; some consider it the best plan to pinch out the point when three or four trusses of fruit are showing, allowing the top side shoot to grow and carry another truss, repeating the operation with each shoot in turn. By this means the bottom three or four trusses are induced to ripen a little earlier, which is a decided advantage. Another plan is to allow the plants to grow their full length and then stop them for the season. The amount of fruit finally produced is the same in each case.

If the second plan is adopted the final stopping should be done about the second or third week in August; there will probably be fruits available until the end of the year.

If the plants are grown in frames on straw as described above the point of the plant should be pinched out when it is nearly high enough to touch the glass. The stage of growth of the plants will thus differ according to their position in the frame. It may be an advantage to tie each plant to a short stake.

Manuring plays a large part in the nourishment of Tomatos, but the amount given must, of course, vary with the natural riches of the soil. An artificial manure which has been tried with considerable success is formed of 6 per cent. nitrogen, 7½ per cent. phosphoric acid, and 13 per cent. potash; but in general it is better to obtain a "Tomato Manure" ready made from a reliable firm—it will be better mixed than any home-made fertiliser.

For the majority of diseases to which Tomato flesh is heir there is no cure. Innumerable letters are sent to the editors of the various gardening journals, and the advice given is always, "Burn all affected parts." Prevention, however, is happily possible, and a good method is to spray the plants with Bordeaux mixture every fortnight. The spray must be the finest possible, and care must be taken that the mixture does not collect on the foliage and scald the leaves. The best time for spraying is in the afternoon, after the sun has left the house; the ventilators must be left open for a short time after the operation. Bordeaux mixture *can* be made at home, but it is far better and safer to use a standard preparation from a reliable source, and keep strictly to the directions given by the maker. Perhaps it is hardly necessary to add that sprayed fruit must always be thoroughly cleaned before being used. *T. W.*

SOME RARE IRISES.

Through the kindness of Mr. C. G. Van Tubergen, of Haarlem, I have lately been able to see flowers of some species of Oncocyclus Irises, which are, unfortunately, not often in cultivation. As usual, the flowers came from new importations, and the plants will probably dwindle in the perplexing fashion of their kind.

Iris iberica is perhaps one of the best known and easiest to grow of the whole Oncocyclus group, but it is not usually known that besides the usual form, in which the ground colour, both of the standards and of the falls, is a pale greyish white, there exists another variety in which this ground colour is a clear yellow. So long ago as 1853 this plant was described under the varietal name of ochracea, and figured in *Gartenflora*, p. 326. The plants which I saw growing in Haarlem were exceptionally vigorous for I. iberica, and the flower which I received was magnificent. The standards are of a clear yellow, with a few faint purple veins and dots on the lower part, while the falls are of the same shade of yellow, so closely blotched with dark brown that the ground colour is almost obscured. The signal patch is of a velvety black.

The plants just described came from the neighbourhood of Van, in Armenia, and from the same neighbourhood there was also received an importation which has proved to contain I. Barnumæ and its yellow-flowered counterpart. I. Barnumæ is one of the most distinct of the Oncocyclus group, for it is in fact the only one that is self-coloured and not blotched and dotted with one colour upon another. Morever, there is hardly any signal patch. Another curious point is that the beards are in some cases of a dull purple colour, and in others yellow. So far as we know, the yellow form has always a yellow or orange beard, but this agrees with what we know of such European species as chamæiris, Reichenbachii, etc. In yellow-flowered forms the beard is always yellow, but in purple flowers it may be either yellow, white or purple—a phenomenon which was also recently recorded as occurring in wild plants of I. illyrica.

Whether the yellow-flowered form of I. Barnumæ is identical with the plant to which the name of urmiensis was given is perhaps open to some doubt, but in any case Sir Michael Foster saw no reason to separate them, and further consideration has failed to show any real points of difference. They may differ as one local colony of I. chamæiris differs from another, but only in such unimportant details that we must hesitate to give specific rank to both. In the same way it is hard to see how I. Mariæ can be separated from I. Barnumæ, though in this case it is curious to find the same species occurring near Van in Armenia, and not again until the Egyptian frontier is reached in Southern Syria.

The sight of a flower of I. paradoxa always causes regret that the plant is so difficult both to obtain and to cultivate, and this regret is only increased when the form proves to be that named Choschab, from the locality in which it was first found. In this the standards, instead of being blue as in the type, are veined with deep violet blue on a silvery white ground. A recent importation from the Aderbaijan province of Northern Persia has once more provided specimens of this unique flower.

Two other Oncocyclus Irises have recently been in flower here side by side. The rhizomes were received from Herr Siehe in 1911 under the names of I. Sprengeri and I. Elisabethæ. The former is perhaps a little smaller, but otherwise the plants and flowers cannot be separated. The veining on the standards of the latter was perhaps rather denser than on I. Sprengeri, but the variation was only such as is constantly found among seedlings of any Iris species. I still see no means of separating these two forms from the plant which Foster originally described as I. Ewbankiana. *W. R. Dykes, Charterhouse, Godalming.*



Fig. 168.—IRIS IBERICA VAR. OCHRACEA.
Standards, yellow with purple lines; falls, yellow, densely blotched with dark brown.

The Week's Work.

PLANTS UNDER GLASS.

By F. JENNINGS, Gardener to the DUKE OF DEVONSHIRE, Chatsworth, Derbyshire.

SOUVENIR DE LA MALMAISON CARNATIONS.—Many gardeners prefer to allow young plants of these Carnations to finish their flowering in 7-inch pots before they are re-potted finally into receptacles 10 inches in diameter. Usually plants that have finished their flowering in 7-inch pots lose some of their foliage, the probable causes being excessive shading, drought at the roots, and crowding. In establishments where large numbers of these plants are cultivated and two-year-old plants are relied upon for furnishing large quantities of blooms it is advisable to place young plants at this date in their final pots for stock purposes, as they not only receive less check through being over-potted, but retain their foliage better; moreover, their re-potting is not detrimental to the flowers. The plants selected for the final potting should possess numerous strong growths which should be tied securely to stakes before the work is done, otherwise many of them may become broken and detached from the main stem. The soil for the final potting should consist of a mixture of three-parts rich loam and equal parts of leaf-mould, coarse sand, mortar rubble and wood ashes, placing a 7-inch potful of soot to each barrow load of the mixture. Great care should be taken not to disturb the roots more than is necessary. Pot firmly and do not bury the stem of the plant below the surface, but only just cover the ball of the plant with soil. When potted stand the plants in a cool house, soak the roots with water and shade from the strong sunshine, keeping the floor of the house and the spaces between the pots well damped. When the plants are re-established afford all the air possible and fumigate the house at regular intervals to destroy aphides. It is an advantage to stand the plants out of doors on a layer of ashes if the district is a warm one.

THE ORCHID HOUSES.

By W. H. WHITE, Grower to Sir TREVOR LAWRENCE, Bart., Burford, Dorking.

EAST INDIAN HOUSE.—Owing to the warm weather it has been possible to maintain tropical conditions in this house, and the plants generally show by their increased vigour that they appreciate the extra warmth. The blinds should be raised during the afternoon when there is no danger from scorching, but early enough to allow the sun to raise the temperature to between 80° and 90°, or even higher when the weather is very warm. After raising the blinds close the top ventilators, but leave the bottom shutters more or less open. Damp the floor thoroughly, especially the places under the hot-water pipes, also the stages and the bare spaces between the pots. Syringe the plants of Dendrobriums well under the leaves to destroy red spider and other insect pests. Most Cypripediums will be benefited by light sprayings, but the water must not be permitted to run down the axils of the leaves as this would be harmful, especially to such plants as C. Stonei, C. Lowii, C. Haynaldianum, C. Transvaal, C. Rolfei, C. Parishii and C. lævigatum. Give such terete-leaved plants as Vandateres, V. Hookeriana, V. Agnes Joaquim and V. Marguerite Maron a thorough syringing overhead, also between the stems and roots, and expose them to full sunshine. This treatment is also beneficial to Renanthera coccinea, Ipsea speciosa and Lissochilus. Plants of Lissochilus giganteus that are sending up new growths should be stood in pans or tubs of water. At first the water should only reach about half-way up the drainage materials, but it may be increased gradually as the growths lengthen until it reaches the rim of the pot. Keep Renanthera Lowii well shaded from the sun at all times. As regards Phalænopsis we make it a practice to spray lightly around the sides of the baskets both early in the mornings and again at closing time. There are many other Orchids which are benefited by having their foliage sprayed over with clean tepid rain water on warm, sunny days. During the evening, should the outside air turn chilly, partially close the bottom ventilators; but if it is possible to do so without unduly lowering the temperature it would be better to keep them wide open all through the night. The night temperature is bound to drop a few degrees, but if a moderate amount of fire heat is maintained little harm will result, especially if at early morning the thermometer stands between 65° and 70°. As soon as the temperature commences to rise by sun heat damp the bare spaces again and admit fresh air gradually. At the time of writing the Thunias in the East Indian House at Burford are making a good show, including such varieties as T. Marshallii, T. Bensonii, T. Veitchiana, T. Brymeriana, T. alba and T. candidissima; altogether there are nearly one hundred flower spikes. All the plants with their tall, drooping spikes of flowers are handsome specimens when well grown. As these plants pass out of bloom place them in a cool, airy house where they may receive plenty of sunlight. They may also be allowed to ripen in a Vinery or Peach house where the fruit is colouring provided the foliage of the fruit trees is not too dense. Water will be required occasionally for so long as the leaves remain green. In a drier atmosphere the leaves are liable to infestations of red spider, but the pest may be kept in check easily by placing the plants down on their sides occasionally and well syringing them with an insecticide or strong soft soapy warm water. Any plants of these Thunias that have failed to flower and are growing to an unreasonable length should have the points of the growths taken out and should be treated like those that have bloomed.

THE KITCHEN GARDEN.

By JOHN DUNN, Foreman, Royal Gardens, Windsor.

PARSLEY.—A good sowing of Parsley may be made now to ensure a full supply during the winter. The position chosen should be sheltered from east winds, which frequently prove harmful during winter. Parsley is a deep-rooting plant, and should be sown on ground which has been trenched and thoroughly prepared for it. Sow in drills at 18 inches apart and made 1 inch deep; when the seedlings are large enough thin them to 6 inches apart, as much better produce will be obtained from plants with plenty of space between them than from those which are left unthinned. Another sowing may be made in a cold pit, or some place where box-frames can be placed over the plants in winter. This sowing may be made about the middle of July and the plants cut over in September so that stocky growth may be produced before the season is too far advanced. The soil between the rows of early-sown Parsley should be stirred frequently to promote clean, healthy growth.

COLEWORTS.—A sowing of Colewort should be made at once to produce plants for early winter supplies. Choose an open position where the soil is not too rich, so that good, hardy plants may be produced. These should be ready for planting on ground at present occupied by early crops of Peas or Potatos. Rosette is a good variety for early use, but to stand the winter Hardy Green and Drumhead Colewort are the best, for they will withstand severe frosts and afford a supply of useful Greens until spring Cabbages are ready to cut. Take advantage of showery weather to plant Brussels Sprouts, Cauliflowers, and other vegetables for autumn supplies. Allow a space of 3 feet between the rows of Brussels Sprouts and 2½ feet from plant to plant in the row. Nothing is to be gained by planting closer than these distances.

WINTER GREENS.—The latest sowing of winter Greens should be made without delay. Dwarf Drumhead Cabbage, Glory and Copenhagen Early may be included in this sowing. These are good, hardy varieties and well suited for winter cropping.

MUSHROOMS.—If an open shed with a north aspect is available a bed may be made now to furnish supplies of Mushrooms in September and October. When the material has been prepared thoroughly it should be trodden tightly together on the floor of the shed and the spawn inserted when the temperature is 80°. After a few days a covering of new loam may be spread over the surface of the bed to the depth of 2 inches. The soil should be made firm with the back of a spade or other implement, and a covering of clean straw placed over the bed to prevent evaporation of moisture.

CARDOONS.—These vegetables may be planted now, in trenches prepared as for single rows of Celery, allowing a space of 2 feet between the plants in the row. Afford the roots liberal supplies of water in dry weather. Seeds may be sown now to raise successional plants.

BROAD BEANS.—The tops of the earliest plants may be removed as soon as a sufficient number of pods are set; this practice will hasten the development of the crop. If late supplies are desired a plantation of Broad Windsor variety may be made in some cool part of the garden, setting the seeds in trenches as for late Peas, as this will enable a liberal supply of water to be afforded the plants in dry weather.

PUBLIC PARKS AND GARDENS.

By SUPERINTENDENT.

TREE PESTS IN LONDON.—Several species of trees and shrubs in the metropolis suffer greatly from attacks of insects, whether at the root, stem or leaf, and at almost every period of their existence. Old Elms and Poplars are the breeding grounds of the Goat and Wood Leopard moths, while both young and old trees of the White Beam, Thorn and allied species are often injured by the borings of these insects. The foliage of the Lime is perforated and rendered unsightly by the Lime Looper moth, the Oak foliage is devoured wholesale by the Oak-leaf Roller moth, while the small Ermine moth or its caterpillar strips every leaf from the Spindle tree and other species of Euonymus. Some years ago the ravages of the Goat moth were on so extensive a scale in Regent's Park that the advice of the late Mr. Robert Marnock was requisitioned as to the best means of combating the insect; in another case the Wood Leopard moth did extensive damage to the Spanish Chestnut trees in one of the London parks, while only last week we were asked to advise as to the best means of ridding Beech trees of the Beech coccus. Young trees of the Hawthorn and several species of Pyrus have been ruined by the grub of the Goat moth, which tunnels into the stem and renders it liable to snap across during stormy weather. The Ivy over large areas in some parts of London has been killed out by the Red Spider, while the roots of many trees and shrubs are permanently injured by repeated attacks of the Cockchafer. The Goat moth (Cossus ligniperda) is far more common over the London area than is generally supposed, and this may also be said of the Wood Leopard moth (Zeuzera æsculi), both of which attack the Elm, Poplar, Ash and Oak. The Goat moth frequents the Willow, Oak, Lime—indeed, most of the hardwooded trees, the tunnels being almost large enough to admit the little finger. The popular name of the moth is derived from the disagreeable smell which the caterpillar emits. It is from 3 to 4 inches long, of a flesh colour with black head and red stripe down the back. The moth is brown, mottled, and striped with darker markings, and when fully developed is often nearly 3 inches in spread of wings. The Wood Leopard moth is smaller than the Goat moth, rarely exceeding 2½ inches in spread; the wings are white or grey with yellowish-brown veins and six dark spots on the thorax, while the caterpillar is yellowish-white, dotted with black spots and a black head. The larvæ of both moths, which are deposited on the bark of the tree in July or August, tunnel into the wood and do much damage to the timber as well as the health of the tree. Placing cyanide of potassium in the hole and closing the aperture is the best method of destroying the caterpillar, though we have used gas tar in a similar way with good results. Dislodging the caterpillar by means of a bent wire has been successfully carried out. Probably the worst damage by these insects in the London parks is that occasioned by their attacks on young trees of Thorn and Pyrus—particularly standards. The caterpillar enters the wood, and in boring upwards weakens the stem so that it readily snaps across in windy weather. The Elm tree

destroyer (Scolytus destructor) is usually abundant in most parts of the metropolis. The beetle is two-tenths of an inch long, stout and cylindrical, and usually confines its attacks to the Elm. In June it bores into the inner bark, forming galleries along which the eggs are deposited. Trees infested by this beetle have an appearance as if the bark had been riddled with shot. Fortunately, unhealthy trees are most frequently attacked, though vigorous young specimens are by no means exempt from injury. Cutting down and burning badly affected trees is to be recommended. Lime trees all over London are attacked by the caterpillar of the Lime Looper moth (Hybernia defolaria), while the Thorn fly, an Aphis, attacks whole hedges of the Hawthorn as well as specimens standing singly. Sponging with tobacco water is to be recommended for the latter, and for the Lime trees caterpillar bands of any sticky substance painted around the stems will prevent the insects ascending to the branches. Red Spider (Tetranychus telarius) is another formidable insect pest that not infrequently attacks the leaves of several species of hardwooded trees, and is often the cause of death of the Ivy, particularly when grown as a ground carpet. The leaves turn a rusty-brown colour, crumple up, and finally fall off, the whole plant dying in consequence. Large areas of the Ivy used for ground work in various parks and gardens of London have been killed outright of late years. Spraying with soft soap will prevent the insect from spreading. Though the Beech is by no means a common tree in London, yet of the few specimens to be found, many are attacked by Cryptococcus fagi, which is alarmingly on the increase in this country. Paraffin or petroleum emulsion will destroy the insect, and scrubbing the bark with a rough brush and soft soap is an excellent remedy. Wholesale destruction to the leaves of the Spindle tree and other species of Euonymus is yearly occasioned in some of the London parks by the caterpillar of the small Ermine moth, myriads of the caterpillars appearing on the foliage during summer. So rapidly does this insect increase, and so verocious is its appetite, that a shrub will be completely stripped of its foliage in two or three days. Spraying with XL All Insecticide or petroleum emulsion is the best remedy. Where Oak trees are found in London, the Oak-leaf Roller moth (Tortrix viridana) is usually present about the beginning of June. It is a very destructive insect, and attacks not only the leaves, but buds and inflorescences, and usually works from the top of the tree downwards. Where only a single or few Oaks are attacked spraying may be resorted to, but hardly any remedial measure can be adopted in a clump or plantation of the tree. Starlings, rooks and other birds destroy vast numbers of this pest, and should be encouraged.

THE HARDY FRUIT GARDEN.

By B. Goodacre, Gardener to Sir Ernest Cassel, Moulton Paddocks, Newmarket.

Vines out-of-Doors.—The season, up to the present, has been all in favour of outdoor vines, and should fine weather continue there is every prospect of the berries reaching full maturity and ripening, which, in a season like last summer, was an impossibility. Many people grow outdoor Grapes for making wine, as when used for this purpose it is not essential for the bunches to be fully ripe. As soon as the bunches are clear of the foliage, and it can be determined which are required for the crop, the others, together with the surplus growth, should be removed. Leave those bunches that are best placed. One of the chief mistakes in growing vines out-of-doors is permitting overcrowding of the foliage, which is harmful not only in excluding air and light from the vine, but in harbouring insects and favouring mildew. Mildew is a common disease of outdoor vines, and unless it is checked at once may entirely ruin the crop. I do not advise the training of the young shoots to be done either by tying or nailing them to the wall until the berries are set, not only because they are brittle, easily snapped, or liable to be twisted out of their sockets, but a hanging bunch has a better chance of distributing its pollen through the whole, resulting in a more even set of the berries and a better shaped bunch. The laterals should be pinched at two or three leaves beyond the bunches, according to the space they are required to furnish. All sub-laterals growing below and against the bunch should be rubbed clean out as soon as they develop; those above the bunch should be stopped to one leaf. When the bunch approaches the flowering stage pinching the shoots should be discontinued until the berries are set, otherwise the vines may experience a check, which will prevent the capsules being thrown off freely, and the berry, if it sets, will become ill-shapen. As I have advised in former calendars, it is always best to train in young canes on these vines. These shoots should be tied now and stopped when they are from 4 to 6 feet long. The pinching and stopping of outside vines is as important as in the case of those grown under glass. The wood scarcely ever becomes sufficiently ripened to prevent bleeding when pruning is practised, therefore the less winter pruning the better for the crop. The bunches may be thinned, allowing not more than one a single lateral, in every case choosing those first formed. This will secure a more even crop, which in itself has many advantages; whilst over-cropping, as in all fruits, produces harmful results.

THE FLOWER GARDEN.

By Edward Harriss, Gardener to Lady Wantage, Lockinge, Berkshire.

Sweet Peas.—Plants raised from seeds sown last autumn and early this spring are commencing to bloom, and if flowers are not required yet they should be removed whilst they are in the bud stage, as this will tend to strengthen the plants and extend the flowering season. If the weather continues dry the roots must be supplied liberally with water. It will also benefit the plants to sprinkle them overhead late in the afternoon. Mulch the soil with short manure, or, failing this, use a layer of any material which will help to keep the ground moist during times of drought. Hoe the ground frequently between the rows, especially after heavy rains or applying water. Stake later plants whilst they are quite small, as they are easily damaged by storms or strong winds. The staking of plants in the pleasure ground requires more than ordinary care; if extra attention is paid to the work of tying and regulating the shoots the stakes may be almost hidden from view. Old flowers must be removed constantly, as nothing exhausts the energies of the plants more than the development of seed pods. Make a sowing of Sweet Peas in shallow trenches to raise plants for very late blooming. Plants growing in tubs intended for placing in the pleasure grounds should have their growths regulated carefully. In some cases it may be necessary to thin the shoots, for if too many are allowed to develop the flowers will be small, and the plants soon exhausted. Sweet Peas in tubs require an abundance of water during the time they are in flower, also a little artificial manure and soot water.

Carnations.—If the early-flowering Carnations are not staked this work should be done at once. Whilst carrying out the work remove some of the buds growing near to the main flowers. Keep the plants well watered, and mulch the beds with a manure from a spent Mushroom bed. Plants of perpetual-flowering Carnations which were planted out at the end of May need the shoots tied on frequent occasions. The best stakes are made from bamboo and painted green.

Climbing Plants.—Climbers on walls or pergolas grow quickly at this time of the year, and the shoots need timely attention in the matters of thinning and regulating. In many cases it is necessary to thin strong growing plants severely to keep them from encroaching too much on weaker subjects. Syringe plants infested with aphides with strong, soft soapy water. Preserve from injury as much as possible young shoots at the base of climbing Roses, as these are required for next season's flowering.

The Reserve Garden.—Surplus flowering plants should be set in some spare part of the garden to furnish cut blooms, and save to a great extent plucking those from the beds or borders near the dwelling-house. Ground selected for this purpose should be well cultivated and manured liberally, as flowers for decorative purposes indoors should be of good substance and colour. The following are a few plants suitable for the purpose:—Delphinium, Astilbe, Pyrethrum, Chrysanthemum, Helianthus, Stocks, Coreopsis, Lavatera, Larkspur, Malope, Clarkia, Godetia, both perennial and annual Asters and Gypsophila. Ruscus racemosus is a hardy foliage plant, and should be grown largely where much indoor decorations are required.

FRUITS UNDER GLASS.

By James Whytock, Gardener to the Duke of Buccleuch, Dalkeith Palace, Midlothian.

Later Peach Houses.—Regulate the shoots of the trees in late Peach houses, to prevent overcrowding. Laterals should be pinched and extra vigorous growths cut out. Ventilate the house freely, and syringe the trees twice daily with soft water, damping the paths and bare surfaces in the house to charge the atmosphere with moisture. Young trees that are growing vigorously may be cropped heavily, and these should be afforded little or no manurial stimulants. But old trees bearing good crops should be fed liberally with manure water, and the borders mulched.

Late Vineries.—The latest vines having set their fruits, the shoots may be tied to the trellis. This operation should be performed with care, especially in the case of varieties with soft shoots, such as Black Alicante, Lady Hutt, Trebbiano, and Appleby Towers. The shoots should be tied gradually lower and lower, at intervals of a few days, until they reach the trellis, which should be sufficiently far from the glass to enable the foliage to obtain plenty of ventilation. Up-to-date, late vineries are made with large panes of glass, and are well ventilated; it is a good plan to allow $\frac{1}{8}$ inch open space where each pane overlaps, besides the usual top and bottom ventilators. All bunches of Grapes should be removed except those required for the crop. Even if the vines seem to be growing vigorously the crop should not be too heavy, or the fruit will not ripen properly. The berries should be thinned as soon as possible, especially in the case of freely-setting varieties, the fruit of which swells very quickly. Late Grapes—especially varieties that produce large bunches—should be thinned more severely than the summer ones, so as to ensure a free circulation of air between the Grapes in the autumn and winter, when the atmosphere is likely to be damp. The final thinning, however, may be delayed until it can be determined which berries are likely to be the largest and best. Do not permit overcrowding of the shoots and foliage, but allow plenty of space for the free development of the necessary foliage. The shoots should be stopped at two joints beyond the bunch, and the lateral growths springing from the base of the leaves allowed to develop only one leaf each. When the thinning is finished examine the border, and if found to be dry soak the soil with liquid manure. If, however, moisture is not necessary, sprinkle a little vine manure over the surface of the border, and afford only sufficient water to moisten the surface roots. Over-watering must be carefully avoided, and efficient ventilation must accompany every application of liquid manure. With regard to fire-heat, this will be regulated by climatic conditions. On bright days the house may be closed at 4 p.m., with a temperature of about 90°. On warm nights very little fire-heat will be required, but a mean temperature of 65° to 70° should be maintained. The paths and other surfaces should be sprinkled daily to maintain a moist atmosphere and so check attacks of red spider.

Tomatos.—Tomatos growing under glass should receive plenty of ventilation, no matter in what stage they may be. If growing in pots or in restricted borders, and carrying a good crop of fruit, the roots should be top-dressed with fresh soil mixed with rich manure and watered frequently with liquid manure. Remove the side-shoots, and stop the plants when a sufficient number of trusses of fruit are set. Seed should be sown about the middle of June to raise plants for fruiting in the late autumn and winter

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the **PUBLISHER**, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher. — *Our Correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the* PUBLISHER; *and that all communications intended for publication, or referring to the Literary department, and all plants to be named, should be directed to the* EDITORS. *The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.*

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS, 41, Wellington Street, Covent Garden, London.** *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

Special Notice to Correspondents. — *The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

Illustrations.—*The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.*

Local News.—*Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.*

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, JUNE 17—

Roy. Hort. Soc. Coms. meet and Nat. Gladiolus Soc. Sh. (Lecture at 3 p.m. by Prof. G. Henslow on "The Evolution of Plants and the Directivity of Life as shown by Vegetative Structures."

Horticultural Club-House Dinner.

WEDNESDAY, JUNE 18—

Yorkshire Gala (3 days). Roy. Meteorological Soc. meet.

THURSDAY, JUNE 19—

Linnean Soc. meet. Kilkenny Summer Sh

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich—59°.

ACTUAL TEMPERATURES :—

LONDON.—*Wednesday, June 11* (6 p.m.). Max 65° Min. 49°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday, June 12* (10 a.m.); Bar. 29.6. Temp. 63°.

Weather—Overcast.

PROVINCES.—*Wednesday, June 11*: Max. 54°, England, S.E.; Min. 50°, Aberdeen.

SALES FOR THE ENSUING WEEK.

FRIDAY NEXT—

Several direct importations of Orchids, 12.45. By Protheroe and Morris. At 67 and 68, Cheapside, E.C.

Japanese old Pigmy Trees, 2. By Protheroe and Morris. At 67 and 68, Cheapside, E.C.

Austro-Hungarian Handbook on Trees and Shrubs.

It is only a short time since we received from Vienna the concluding part of *Laubholzkunde*, Dr. Camillo Schneider's great work on trees and shrubs. His remarkable enthusiasm has evidently stimulated much interest in arboriculture in Austro-Hungary, where a flourishing Dendrological Society, which was started only four years ago, has lately begun to make important contributions to the literature of the subject. Six monthly numbers of Transactions have already appeared, as well as several practical manuals. The manual* now before us, which is edited by Count Silva Tarouca, the President of the Society, treats of the propagation, cultivation and care of all the broad-leaved trees and shrubs which are known to be hardy in Central Europe. Count Tarouca has summoned to his aid some of the leading specialists in Europe and in America, and the book is consequently of great value. It is intended rather for the amateur than for the professional botanist or scientist. Botanical details are confined within narrow limits, but so far as they go, will prove very useful to the ordinary reader, who has no time or inclination for the study of plants in a technical way.

The book is a handsome volume of over 400 pages, profusely illustrated with nearly 500 figures in the text, and with sixteen coloured plates. It is well printed, the misprints appear to be few,† and has only one defect, being somewhat heavy to handle on account of the quality of the paper.

The first part of the book consists of a series of monographs on special subjects; and the second part is general in character and alphabetically arranged. The monographs are of very varied interest. Count Tarouca gives a chapter on the laying out of parks and pleasure grounds, which is followed by a similar study of gardens by Schneider. Baron Ambrozy's article on the uses of evergreens in beautifying the landscape in severe northern climates is of great value. Hesse, of Weener, in Hanover, gives an account of the choicest species, classified according to size, time of flowering, whether they excel in effect on account of their foliage or flowers, etc. This is followed by Dr. Hellmuth Späth's views on the best species for general cultivation. It may be stated here that the illustrations which accompany these articles are well chosen, as, for example, fig. 46, which gives a good idea of Robinia Pseudacacia var. Bessoniana, as a street tree; fig. 37, showing the same use of the globose variety of the Norway Maple; and fig. 475, illustrating similarly Ulmus campestris umbraculifera.

Sir Harry Veitch gives an account of the fifty most beautiful trees and shrubs, which have been introduced from China of late years by his firm. Photographs of several species growing in the wild state, which were taken by Mr. E. H. Wilson, are reproduced, and are very attractive, cf. fig. 47, Actinidia chinensis; fig. 189, Cladrastis sinensis; fig. 202, Cornus Wilsoniana; fig. 289, Juglans cathayensis; and fig. 382 Pteroceltis Tatarinowii.

Rehder deals in ten pages with the North American species. His explanation (page 74) of the rarity of Platanus occidentalis in Europe being due to the southern origin of the seed, does not seem to be well founded. A tree at Kew, which was raised from seed imported from Michigan, only lived a few years. The difficulty of keeping alive in western Europe certain American trees (as Quercus alba, Fraxinus nigra), depends on the close adaptation of these species to the continental climate which prevails in the eastern parts of North America. These trees do not ripen their wood in our sunless autumn; and being repeatedly damaged by early and late frosts, they ultimately succumb. The superiority of P. acerifolia (the London Plane) not only in Europe, but also in New England, where it succeeds better in towns than the native P. occidentalis, is doubtless due to its hybrid origin, which Schneider suggests. It appears to have originated in France about 1700, after the American Plane had been introduced many years: and the numerous forms of it in southern France, Italy and Spain, where F_2 seedlings are of likely occurrence, leave little doubt that its parents are P. occidentalis and P. orientalis.

One of the most interesting articles is that by Wolf and Kesselring, who give the results of their experience of the trees and shrubs which can be grown with success in the severe climate of Northern Russia and Scandinavia. Their observations are concerned more especially with the district around St. Petersburg, which is perhaps the most northerly point where a large number of species can be cultivated. It is interesting to note that of all the Bamboos, only Arundinaria nitida is hardy at this high latitude. Trees like the Planes, the different species of Robinia and Sophora japonica cannot be cultivated. Only one species of Magnolia (M. acuminata) can be grown, and that only in sheltered situations. Fraxinus mandshurica, a native of Eastern Asia, which absolutely refuses to grow in England, is said by Wolf and Kesselring to be so closely adapted to a continental climate that its imperfectly ripened shoots are usually much injured by frost in the maritime climate of St. Petersburg, whereas in the interior of Russia at Moscow it is perfectly hardy. This confirms the remarks made above on certain American trees, which suffer in the same way with us.

Schwappach, who has perhaps the greatest experience on the subject in Germany, gives an article on the exotic broad-leaved trees that are likely to be valuable from a forestry point of view. It is doubtful if any of those which he names, except Juglans nigra and Quercus rubra, are worth trying, at any rate in England, though in certain situations Robinia Pseudacacia might be a useful timber tree.

After a special article by Arends on the Ericaceæ, Purpus treats at considerable length of the use of shrubs in rockeries, and Zeman concludes the first part of the book with a chapter on the different modes of propagation.

The second half of the work is a dictionary of trees and shrubs, arranged alphabetically by genera, and comprising

* *Unsere Freiland-Laubgehölze*, by Ernst Graf Silva Tarouca. Published in 1913 at Vienna, by F. Tempsky, and at Leipsic by G. Freytag. Pp. 420, with 495 figures in the text, and 16 coloured plates.

† The unusual spelling Eriobothrya is used on page 215 for Eriobotrya. On page 243, line 1, cathayensis is misspelt.

about 250 pages of text. The numerous figures, which are reproductions from photographs, have been selected to illustrate the habit of the choicest or most novel species of the genera that are described, the shrubs being usually taken when in flower. Of purely botanical figures there are scarcely any, but occasionally photographs of branches with foliage are given (as fig. 389, Quercus Libani; fig. 390, Q. serrata; fig. 392, Q. pontica; and fig. 395, Q. glandulifera), which will prove helpful in the identification of rare species that are difficult to procure true to name. This dictionary of trees and shrubs, whilst condensed, is of great merit, on account of the accuracy of the nomenclature, the short notes on the propagation and use of each species, and the inclusion of all the most recent introductions. We find, for example, adequate reference to certain species, which, though of great interest, have scarcely yet, owing to their novelty or rarity, appeared in ordinary English handbooks. The arrangement of the large genera, which are split up into natural sections, is admirable.

At the end of the volume are useful lists, in which trees and shrubs are catalogued in the most diverse ways—according to their soil requirements, their time of flowering, the colour of their fruits, the colour of their twigs, the tints of the young foliage in spring, the autumnal coloration of their leaves, etc. Lists are also given of species with aromatic flowers or leaves, of evergreen and half-evergreen species, of climbers and twiners, of shrubs and trees suitable for making hedges, of thorny kinds, of the species best adapted for planting in streets and in avenues or walks; in fact, this handbook is full of accurate and useful information about broad-leaved trees and shrubs, arranged in the most convenient manner. With a little adaptation, a translation of it into English would be welcome.

Coloured Supplement.—The subject of the coloured plate to be published with the next issue is Nymphæa gigantea var. Hudsoniana.

Royal Horticultural Society.—A meeting of the Committees of this Society will take place on Tuesday next in the Society's hall, Vincent Square, Westminster. At 3 p.m. a lecture on "The Evolution of Plants and the Directivity of Life as shown by Vegetative Structures" will be delivered by Rev. Prof. G. Henslow, M.A., V.M.H.

Horticultural Club.—A House Dinner of the Club will take place on Tuesday, the 17th inst., at 6.30 p.m., at the Hotel Windsor. After dinner Mr. Arthur Pullen Burry will deliver a lecture entitled "The Efficient Movement of Large Glass Structures and its Economic Value as Applied to Intensive Culture." The lecture will be illustrated with lantern slides. Market gardeners desiring to be present should communicate with the Hon. Sec., Mr. R. Hooper Pearson.

Gardeners' Royal Benevolent Institution.—The seventy-fourth anniversary festival dinner of the Gardeners' Royal Benevolent Institution will take place at the Hotel Metropole, Northumberland Avenue, on the 25th inst. Mr. Leopold de Rothschild, who will preside at the dinner, makes an appeal for increased support to



Fig. 169.—Pæonia delavayi: flowers crimson.

(See page 405.)

enable the Fund to continue its good work among gardeners or the widows of gardeners who are in need of help. Mr. ROTHSCHILD points out that the sum of £4,500 is required yearly, of which amount only £950 is assured from invested funds. Two hundred and fifty-eight necessitous gardeners or widows of gardeners are at present receiving pensions from the Fund, and since its institution a sum of no less than £140,000 has been distributed by the charity.

A NATIONAL BOTANIC GARDEN FOR SOUTH AFRICA.—The project of establishing a national botanic garden for South Africa, which has been urged often and from various quarters, appears to be at last in course of realisation. A definite proposal to establish such a garden was made in the House of Assembly on Wednesday, May 7, and was accepted unanimously. The motion embodying the proposal was submitted to the House by Sir LIONEL PHILLIPS in a powerful and convincing speech, and, indeed, if the project matures it will be due largely to the public-spirited attitude taken by Sir LIONEL. The arguments which he used must appeal to all sections of the community. In South Africa there is a wonderful flora to be conserved and investigated; the beauty and amenity of the country must be maintained and the possibilities of plants from the economic standpoint must be investigated. The Union possesses able and distinguished botanists, competent to carry on this work, and the expense of maintaining a national garden is but small. We are glad to know that the appeal made by Sir LIONEL PHILLIPS is likely to bear fruit, and we hope that we may be able soon to congratulate the Union of South Africa on the establishment of a garden worthy of that great country.

LARGE LETTUCES.—Mr. W. H. PRATT, Kingston-by-Sea, Brighton, has forwarded two plants of Cos Lettuce weighing 4lb. 2oz. and 3lb. 6oz. respectively. They were pulled from a field of an acre planted with Cos Lettuces, and Mr. PRATT informs us that some of the heads weighed 6½lb. to 7lb. each.

LINNEAN SOCIETY.—The next general meeting will be held on Thursday, June 19, at 8 p.m. Exhibitions and papers:—1, Mrs. LONGSTAFF, Impressions of the feeding-tracks of Limax maximus and Helix aspersa; 2, Mr. E. G. BAKER, African species of the genus Crotalaria; 3, Dr. W. T. CALMAN, on Aphareocaris, nom. nov. (Aphareus, Paulson), a genus of the Crustacean Family Sergestidæ; 4, Miss FULLER, Water-colour drawings of Australian and South African plants; 5, Dr. AGNES ARBER, An anatomical study of the Cone-genus Lepidostrobus; 6, Mr. G. H. WAILES, Freshwater Rhizopoda from North and South America; 7, Mr. CEDRIC BUCKNALL, Mus.Bac. (Oxon), A Revision of the genus Symphytum, Tourn (communicated by Mr. JAMES W. WHITE); 8, Dr. C. E. Moss, Some New British Plants.

NATIONAL GLADIOLUS SOCIETY. — The first Exhibition for 1913 of the National Gladiolus Society will be held on the 17th inst. at the Horticultural Hall, Westminster, in conjunction with the R.H.S. fortnightly meeting. The schedule includes four classes:—(1) For 12 varieties of early-flowering Gladioli; (2) 6 varieties of early-flowering Gladioli; (3) 3 spikes of a new seedling variety; and (4) a group of Gladioli.

WOLVERHAMPTON FLORAL FETE.—This year's Show at Wolverhampton is the 25th annual Exhibition, and in order to mark the occasion the prize money has been increased and four new classes added to the Schedule. These are for:—(1) A display of growing bedding-out Plants; (2) a collection of Roses; (3) single spikes of Seedling Delphiniums; and (4) a display of cut blooms of Souvenir de la Malmaison Carnations. The schedule for 1913 is by far the largest in the history of the Society. The Exhibition will be held as usual in the West Park.

PRESENTATIONS TO MR. A. C. SMITH.—On the 5th inst. at Wisley Mr. C. A. SMITH, Assistant Superintendent at the R.H.S. Gardens, received presentations from the Superintendent, employés and students, on the occasion of his leaving the Gardens to take up his new duties at Hatchford Park. Mr. S. T. WRIGHT, in making the presentation, expressed the very deep regret of all at Wisley at Mr. SMITH's departure. Mr. SMITH, in returning thanks, drew attention to the importance of loyalty to authority in the promotion of good feeling among the members of a staff.

NATIONAL CHRYSANTHEMUM SOCIETY.—The annual outing of the members of the National Chrysanthemum Society will take place on Monday, July 21, when a visit will be paid to Friar Park, Henley-on-Thames, the residence of Sir FRANK CRISP. The secretary, Mr. RICHARD A. WITTY, will be glad to hear from those intending to be present on or before July 16.

EXAMINATION IN HORTICULTURE. — The Diploma Examination in Practical Horticulture, organised by the Women's Agricultural and Horticultural International Union, will be held on July 16, in the gardens of Hatfield House, by permission of Lord and Lady SALISBURY. The examiners are Mr. PAINE, gardener at Hatfield, Mr. HAZELTON, of North Mymms Park, and Miss C. M. DIXON. The examinations are open to persons of either sex. Entry forms may be obtained from Miss J. S. TURNER, Arlsey House, Arlsey, hon. sec. of the Educational Department; or at the office of the Union, 45-6, Queen Anne's Chambers, Westminster.

A REVERSIBLE BARREL.—A patent has recently been taken out for what is described as a reversible barrel. It consists of two equal-sized conical steel halves bolted together in the middle at a joint consisting of an elastic and chemical proof dermatine ring lying in a groove. The principal advantage of this design is that, in returning empties, the halves can be nested one in another and so take up far less space. Steel barrels for holding 10 cwt. of molasses and weighing themselves 2 cwt. each are returned empty to Natal at a freight charge of 7s. 6d. each; nested barrels of the same capacity would go for 2s. 6d. Again, mineral oil barrels which would cost £1 17s. 6d. to return to the United States (the charge being by space), could be replaced by nesting barrels which travelling by weight would cost 5s. to return empty. There are other advantages claimed for this patent barrel, such as the ability to clean and coat the insides. All halves are interchangeable, any two will make a barrel, or single halves may be used with a cover plate. *Agricultural News* (West Indies).

FLOWERS IN SEASON.—Messrs. PERRY have forwarded blooms of their new Oriental Poppies, Perry's Unique, which received the R.H.S. Award of Merit on the 3rd inst., and Perry's White. The former has deeply-cut petals, giving the flower a much-fringed appearance. The colour is rich scarlet. Messrs. PERRY also send a selection of Irises of I. sibirica section, with flowers of various shades of blue.

THE USE OF HIGH EXPLOSIVES IN TILLAGE.—On the 3rd inst. a party of agriculturists, horticulturists and foresters visited the nurseries of Messrs. DICKSONS AND CO., Craigmillar, Edinburgh, in order to witness some experiments with high explosives in breaking up impervious subsoils. The substances used were gelignite and polarite. In the first experiment, polarite cartridges were inserted at a depth of 2½ feet and 5 feet apart, and in the second ordinary gelignite charges were inserted at a depth of 3¼ feet and 6 feet apart, and all were fired by means of a safety fuse. So far as the operation of blasting went, everything passed off successfully, but it was soon apparent that the tough clay, of which the subsoil in this case consists, was not easily shattered by this means, and that to do it effectively the charges would require to be placed much more closely than at 5 feet intervals, which, however, would make the cost prohibitive. The operations were carried out by Messrs. NOBEL.

WOMEN'S AGRICULTURAL CONGRESS. — The Board of Agriculture and Fisheries are informed that the 3rd International Congress of Women's Agricultural Associations ("Cercles de Fermières) will be held at the International Exhibition, Ghent, Belgium, from June 13 to 15 next. The programme includes reports on the work and organisation of Women's Agricultural Associations in various countries, on the kinds of farm work which may be undertaken by women, and the work of the woman agriculturist in the role of mother and manager. Anyone desirous of becoming a member of the Congress and of receiving copies of the reports should send a subscription of 10 francs to the treasurer, Miss VAN AARSCHOT, 38, Rue du Pepin, Brussels.

ONION-GROWING IN AUSTRALIA.—The *Kentish Mercury* publishes the following letter on Onion-growing from WILLIAM ROBERT SNELL, Dalyston, Gippsland, Victoria, Australia:—"It may be of interest to your readers to know that the Onion that is grown principally in these parts is the Brown Globe or 'Deptford' Onion. This is the manner in which they are grown here. A cultivator will lease a piece of land at a rent of £1 to £3 an acre, and turn out up to 20 tons per acre. Last year Onions fetched £12 to £16 per ton—this year only £8, and in some years the price is down to £2 and £3—so you see the growing of them is a gamble. There are only certain parts of Australia in which they can be grown, but with a good season and good prices a person can soon make money. The 'Deptford' Onion is the best for keeping and exporting to the different States in Australia, being thick-skinned and standing the heat well. Can you inform me why it is called the 'Deptford' onion? Your reply, if sent to the Editor of the *Great Southern Star*, Leongatha, Victoria, Australia, would be of interest to the growers, who are fairly numerous in that district." Mr. Snell may be interested to know that Deptford was formerly the seat of important market gardens, and places like Deptford, Enfield and Hammersmith gave their names to varieties of vegetables.

THE POTATO CROP. — According to the monthly report of the Board of Agriculture and Fisheries the area under Potatos will probably prove about 1 per cent. less than last year, although a slightly increased acreage is reported in the chief Potato-growing districts of Lincolnshire and Lancashire. Planting is very late and not everywhere completed. Where showing, the young crops are very generally healthy and quite satisfactory, but this can only be said of early varieties, as in most districts very little of the main crop is yet above ground.

ST. PETER'S SQUARE, HAMMERSMITH. — The Parks and Open Spaces Committee of the London County Council report that their attention has been called to the desirability of steps being taken to secure the preservation for use as an open space of the garden in St. Peter's Square, Hammersmith. The garden is slightly over 1¾ acres in extent, and the Committee say that it is evident that immediate action is necessary to prevent the erection of houses on the whole of the site. Having regard to the size and situation of the property the Committee do not consider that the garden is such as should be acquired and maintained by the Council, but they regard it as being sufficiently important to justify the Council in assisting the local authority to purchase it for public use. They understand that all the interests in the property can be acquired for approximately £7,500, which would include the amount of compensation required by the builders for relinquishing the building operations. They suggest that the Council should

contribute £4,000 towards the purchase money on condition that the Hammersmith Borough Council shall acquire and undertake to maintain the garden for the use of the public for ever. In December, 1910, the London and South-Western Railway Company paid the Council £4,000 as compensation for rights obtained over a part of Ravenscourt Park. It was the intention of the Committee to advise the Council to utilise the compensation money in providing additional open space in Hammersmith, and they consider that the present proposal affords an opportunity for discharging such obligation as may have been deemed to rest with the Council.

PÆONIA DELAVAYI FRANCH.

SEEDS of this Pæony, being some of those collected in China by Mr. E. H. WILSON, were sent to the Glasnevin Botanic Gardens in the spring of 1909 by Prof. SARGENT, of the Arnold Arboretum, and the plants raised from them flowered in the open ground at the end of May and beginning of June, 1912. Although in severe winters the stems may be cut by frost to the ground level, the stools throw up growths freely from their bases in the spring. Certain plants also show an inclination to spread by means of underground stems. In appearance P. Delavayi (see fig. 169) has some resemblance to P. lutea, but the flowers are of deep velvety-crimson, with a large mass of yellow stamens in the centre. The blooms are two inches in diameter, and the petals are remarkable for their great substance.

The growth is sub-shrubby, and up to the present the plant has formed a bush about 2 feet high, but it may grow taller The foliage is probably the most handsome of any in the genus; each leaf is a foot long and finely divided, the segments being much narrower than in P. lutea, whilst the colour is light green above and almost glaucous beneath. *C. F. Ball, Glasnevin Botanic Gardens, Dublin.*

THE CULTIVATION OF WITLOOF CHICORY IN BELGIUM.

DURING recent years the cultivation of Chicory has become a very important industry in Belgium, and the market growers of that country export large quantities of the vegetable to Great Britain, France, Germany, Holland, and even America. On the Continent, especially, the "chicons"—as the blanched heads are known—are largely used as salading, and sometimes they are eaten as a cooked vegetable. It is just sixty-seven years ago since the first "chicons" or blanched leaves were grown in the town of Schaerbeek and carried on the heads of the growers to the Brussels market. As showing how the industry has grown, it may be stated that in the Brussels district alone some 7,136 acres are devoted to the growing of Chicory. The principal market gardens are found at Evere, Haeren, Neder-over-Heembeek, Dieghem, Saventhem, Woluwe-Saint-Etienne, Machelen, Melsbroeck, and Vilvorde. In addition, Chicory is grown near most of the large towns in Belgium, including the neighbourhood of Louvain, Malines, Ghent, Antwerp, Mons, Tournai, Namur, and Huy. Between October and April Witloof Chicory is despatched to all parts, and from the railway station at Schaerbeek alone is sent every year more than 7,717,751lb. weight of the vegetable, the greater part to Paris. The exports



FIG. 170.—WITLOOF CHICORY.

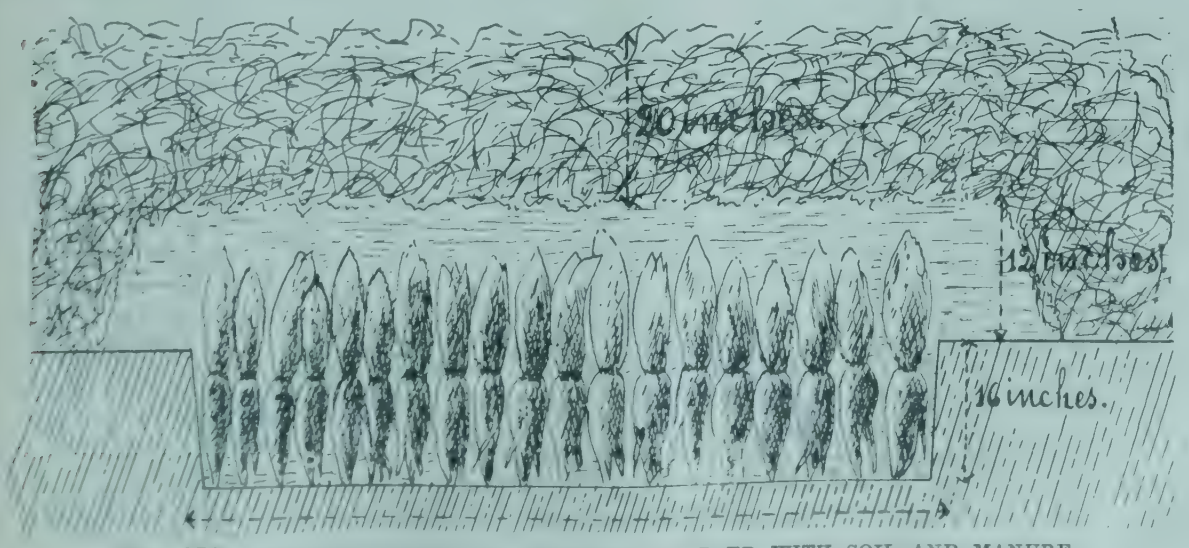


FIG. 171.—CHICORY FORCED IN TRENCHES COVERED WITH SOIL AND MANURE.

tion of the vegetable to New York has increased very much during the past few years. On December 28, 1912, there were dispatched from Antwerp for New York 1,633 baskets, each basket containing 22lb. of Chicory. In January, 1913, more than 6,000 baskets were dispatched to America. The following figures illustrate the growth of the trade with the United States.

Months.	1909.	1910.	1911.	1912.
January ...	1,869	3,676	3,200	3,064
February ...	2,408	3,367	3,654	2,877
March... ...	1,822	3,408	4,039	3,774
April	2,755	3,448	3,775	2,243
May	1,722	35	1,379	—
September ...	865	681	1,739	1,865
October ...	2,334	3,104	2,325	3,180
November ...	1,809	2,477	2,947	3,572
December ...	1,715	3,826	3,467	3,874
Totals (lbs.)	17,299	24,022	26,527	24,449

But these figures do not represent the total quantity, for from London the Atlantic Transport Company tranships from 22,000lb. to 26,000lb. per week. Every week in the season Brussels sends to London by way of Antwerp and Harwich, or Ostend and Tilbury, an average of 32,878lb. In addition to all this, buyers in Holland take 220,000 to 264,000lb. per month. Trade with Germany accounts for 1,765lb. per month, whilst Switzerland receives 80,871lb. per month, and the trade with that country is increasing every year. The principal varieties of Chicory cultivated are:— (1) The wild or coffee Chicory, which has been cultivated for numbers of years as a salad vegetable; (2) Witloof, or Improved Wild Chicory, which originated in the neighbourhood of Brussels. The leaves of this variety are very large and make good heads. As will be seen on reference to fig. 170, the roots are very smooth and of regular shape. (3) The Large Root Chicory, or Brunswick variety. This sort has shorter roots than the Witloof, and is suitable for growing in a shallow soil that would not be deep enough for the Witloof.

METHODS OF CULTURE.

Ground for Chicory needs to be fairly rich in manure, deeply cultivated, and not too heavy in texture. The Belgium growers trench the ground a year before planting, incorporating with it a heavy dressing of farmyard manure. The manure is well decayed when the time for planting arrives, and this is important, for fresh dung would cause the roots to become coarse, forked, and altogether unsuitable for forcing. The best time to sow the seed is the middle of May; if sown earlier the plants may flower prematurely, and as a consequence the roots are weakened and rendered useless. The seeds are set very thinly in drills made an inch deep and drawn at 10 in. apart. They are covered with fine soil and made firm by rolling. During warm weather the seeds soon germinate in most soils. When the seedlings are a few inches high they are thinned to 10 in. apart in the row. The soil is hoed frequently to destroy weeds and loosen the surface. It is necessary to allow all the leaves to develop, for if any are removed the roots suffer. Plants that show signs of flowering are removed at once and discarded. By the end of October the roots are lifted for blanching. If more are lifted than are required, the surplus ones are placed in a trench and covered with dead leaves to protect them from frost. When the Chicory is lifted the head is cut off with about an inch of the crown of the root. Blanching is commenced in October, when the demand for forced vegetables begins There are several methods of blanching: (*a*) The roots may be forced in a dry, dark cellar, on a mild hotbed made with fresh horse manure. The bed is made 2 ft. thick and 6 ft wide, the length varying according to the width of the cellar. When fermentation causes

the dung to become hot the bed is covered with a layer of rich, light soil to a depth of one foot. As soon as the soil becomes warm the roots are planted close together in rows, each row being 6 in. apart. It is important to arrange the crowns all at the same level, and they are then covered with 8 in. of very light soil. To furnish a succession of "chicons" all through the season it is necessary to make a fresh bed every month. (*b*) The forcing may also be done in a warm greenhouse, when the arrangement of the roots is the same as in the beds in cellars. In all cases the forcing must be done in complete darkness.

FORCING IN THE OPEN.—Chicory may be forced in trenches made out-of-doors as shown in fig. 171. The trenches are 16 in. deep and 1½ yards wide, and the roots are planted closely together in rows, always at the same level. They are first covered with a 12 in. layer of light soil, and afterwards with a bed of fresh stable manure. The manure must be well trodden and 20 to 24 in. in depth. By this method the heads may be gathered in three weeks from the time of planting.

FORCING IN FRAMES.—The market growers use portable heated frames known as thermosiphons, of which an illustration is given in fig. 172. This is the best method of all, and produce grown in this way is always of the finest quality. The hot-water pipes are set either above or under the soil (see figs. 173, 174). The temperature is maintained at 60° to 70° Fahr., and it must never be allowed to rise higher than 77°. The trenches are made as described before, the roots being covered with soil. If any of the roots are too long they may be shortened a little. The crowns are covered with good soil to a depth of 12 in., and the lights are then placed in position. The temperature may easily be regulated.

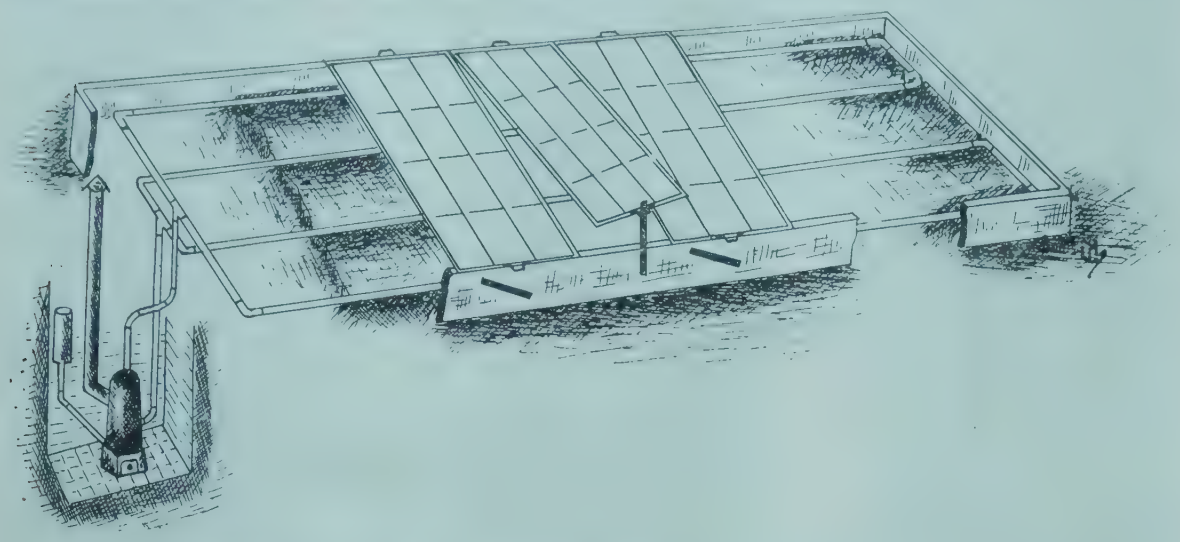


FIG. 172.—THERMOSIPHON (HEATED FRAME) METHOD OF FORCING CHICORY (WITH THE HOT-WATER PIPES ABOVE THE BED).

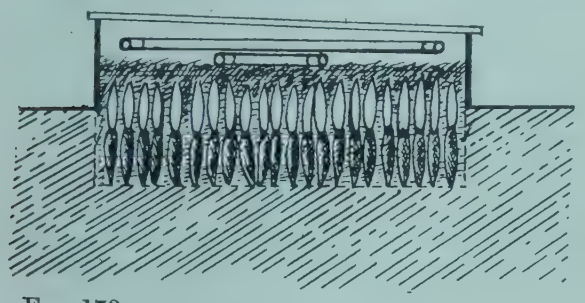


FIG. 173.—SYSTEM OF FORCING WITH HOT-WATER PIPES ABOVE THE BED.

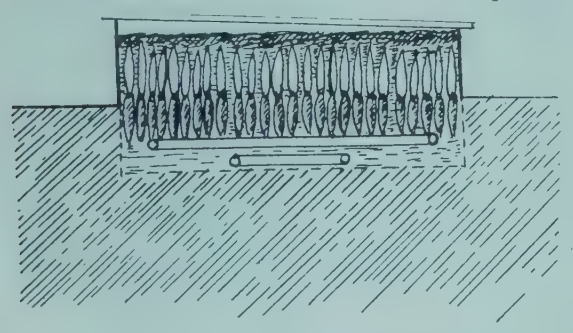


FIG. 174.—SECTION SHOWING HOT-WATER PIPES BELOW THE ROOTS.

By this system the crowns may be gathered after the second or third week of forcing, and a succession may be obtained from November to April. *Henri Chevalier, Professor of Horticulture, Liége, Belgium.*

INDIA.

THE POTATO MOTH.

In the *Gardeners' Chronicle* for May 3, 1913, there occurs an account of the Potato Moth.

This pest first appeared in Behar in 1907, and did serious damage to stored Potatos in the neighbourhood of Patna, an important market-gardening centre. The amount of damage done can be estimated from the diminution in the export trade, as seen in the following figures:—

Year.	Export in tons.
1908	10,198
1909	4,547
1910	2,893
1911	1,988
1912	1,492

No figures are available previous to 1908.

In 1908 experiments were conducted at Patna on the best method of treating Potatos to prevent damage by the pest, with the result that Mr. Maxwell Lefroy's method of storing under sand was adopted. It was found that the dipping of the tubers in crude oil emulsion recommended by Lefroy and Evans (*Agricultural Journal of India*, Vol. V., Part 1, 1910) was not necessary, and for the past three years the method of storing Potatos under sand alone has proved a complete success. In other centres with a moister climate the Rhizoctonia fungus and bacteria usually cause considerable damage, and have masked the results obtained by this method of storage. That the Patna cultivators believe in the efficiency of the method of storing Potatos under sand as a prevention of the Potato Moth may be proved by the figures given below:—

Year.	Cultivators stored.	Potatos under sand. Tons.
1909	0	0
1910	6	5
1911	200	311
1912	398	607

The figures for the quantity of tubers stored is probably underestimated, as cultivators were afraid that they might be charged a percentage on the amount they saved.

The cultivation of Potatos, which was almost abandoned in 1911, has now begun to increase again.

As regards the best way of storing Potatos under sand, we have found it advisable to store the Potatos in low heaps (not deeper than one foot) on raised benches covered with bamboo or grass matting. Clean, dry river sand is then spread over the tubers so that they are all well covered. The tubers are picked over some twenty or thirty days after storage, and, in cases of a bad attack of the Moth, the cocoons are sifted out of the sand and destroyed. The tubers are then covered up again if the Moth can still be found, and no appreciable damage from the Moth is usually found after this first picking. If the Moth has disappeared, and the tubers are showing signs of rotting as a result of moist, warm weather, they are exposed until the Moth again makes its appearance.

It is important that the Potato should be kept as dry and cool as possible, and the sand must also be kept dry if sprouting is to be prevented. We have usually found that the total loss (for drying and decay, etc.) on storing by this method is 50 per cent. of that put into storage (*vide *Agricultural Journal of India*, Vol. VII., No. 3), but this method of storing seed Potatos pays well in areas where the Potato Moth is prevalent.

The advantages of the sand method of storage over the methods of chemical disinfection quoted in your paper would appear to be as follows:—In case any eggs or larvæ (which are *inside* the tubers and so out of the reach of the applications) escape the poisonous liquid used for spraying or steeping they can increase freely and do considerable damage unless the treatment is repeated at frequent intervals, besides which Moths from outside can lay their eggs on the tubers. In the case of the tubers stored under sand, however, the larvæ pupate in the sand and the Moths are killed or escape into the open air without being able to get back to the tubers to lay their eggs. The number of Moths is usually found to decrease rapidly when they can find no Potatos on which to lay their eggs.

It will be seen therefore that the method of storage under sand is by no means less likely to be effective than the chemical methods detailed in the article to which I have referred. *J. Woodhouse, Economic Botanist, Behar and Orissa Sabour, E.I.R. Loop, India.*

*Fuller accounts of the operations against this pest in Behar will be found in *Bengal Quarterly Journal*, Vol. IV., No. 4, and *ibid.* Vol. V., No. 3.

WEST INDIES.

FRUITS IN JAMAICA.

THE *Bulletin* of the Department of Agriculture, Jamaica (Vol. 2, No. 6), contains a useful summary by Mr. W. Harris, Superintendent of Public Gardens, of the fruits which grow in Jamaica. Apart from the well-known tropical fruits it is interesting to learn that the Apple produces good fruit on the slopes of the Port Royal and Blue Mountains between 3,000 and 4,000 feet. The Nilgiri Blackberry, Rubus racemosus, grows well, and has such delicious fruit that it should prove worth while introducing the species into this country with a view to hybridising.

Among the most valuable of Jamaican fruits is the Grape Fruit, so popular in America. The value of the exports of this fruit is about £20,000 per annum. Citrus decumana, from which the Grape Fruit is obtained, is a small tree from 15-30 feet high. Until recently the trees were regarded as useless, and used to be destroyed.

The Grape vine flourishes and yields well, often bearing two crops a year, the varieties most grown being those which find most favour also in this country.

Cantaloupe and Musk Melons, Cucumis Melo and the Water Melon, Citrullus vulgaris, thrive,

and the Strawberry, which is a different species from that growing wild in this country, give good fruit when cultivated at altitudes between 1,500 and 3,000 feet.

Of Jamaican vegetables Mr. Harris describes a considerable number. The Kidney Bean is grown by the peasantry as a field crop, and the Sugar Bean, Phaseolus lumatus, thrives in the plains and lower hills.

Species of Amarantus are used as "spinach," and, of course, corn (Zea Mays) is grown largely, though why it should be classed as a vegetable is not clear.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

The Chelsea Show.—The following further amendments were made by the Council of the Royal Horticultural Society in their lists of awards given at the Chelsea Show :—Silver-gilt Cup in lieu of Silver Cup to Sir Jeremiah Colman for Orchids. A Silver Banksian Medal in lieu of a Bronze Banksian Medal to Messrs. Cooper, Pegler and Co., for spraying apparatus. The Council also gave a Highly Commended award to Messrs. Barford and Perkins, motor roller, at their meeting on the 4th inst. under the trial of horticultural sundries. *W. Wilks, Secretary.*

Fruit-Buds Not Flowering and Blossom Withering.—I am obliged to *G. H. H. W.* for his remarks upon the former subject, and to *South Hants* for his observations, both on page 332. As to the former, bullfinches have often damaged Plums and Gooseberries in my orchards, but never to my knowledge Apples or Cherries. I do not see any evidence of birds having rendered fruit-buds blind. There is nothing unusual in fruit-buds developing only trusses of leaves; for on whole trees and many of them which fruit only in alternate seasons all the fruit-buds behave in this respect in the non-fruiting years. But I have noticed more disappointing results than usual of the kind this season on varieties which usually fruit every year. No doubt the reason is that the fruit-buds were not thoroughly matured last summer. Next season they will almost certainly bear blossom. With respect to the remark of *South Hants* it is curious that Apple Golden Spire fruits annually with him. With me it has been invariably an alternate year fruiter from the planting until the present season. Lord Grosvenor and Allington Pippin fruited only too profusely for several years, but have now become fruitful only in alternate years. The wholesale withering of trusses of Apple blossom this season and the phenomenal dropping of Plums are more obscure subjects. On both points my remarks of last week fell short of the full representation of the losses, as these are now to be noticed. In particular the almost complete dropping of Victoria Plums has to be reported. Out of fourteen varieties which I grow, including a few trees of choice dessert Plums, Czar is the only one bearing more than a sprinkling of fruit, and Damson trees are almost entirely barren. With respect to bacterial damage to Apples, Professor Barker, of the University, Bristol, reports that he found the bacilli he has under investigation in some of the trusses of withered blossom trusses of two varieties of Apple which were sent to him. *A Southern Grower.*

The Fruit Crops.—*A Southern Grower's* experience with regard to his fruit crop prospects is almost identical with mine. I was very puzzled over the Apple crop; all the early-flowering varieties set their blossom satisfactorily, but after about three weeks of warm weather in May, on the 30th of that month, it suddenly turned wet and very cold, and in two days all the blossom that was open collapsed, apparently from brown rot. Some large trees have not a dozen fruits, although they were covered with blossom. We have experienced no frosts this spring. Plums set a heavy crop, which is rare with us, but only about 20 per cent. of the fruits will develop, whilst several trees and many branches on others will die. Pears, with the exception of wall trees, have a bad infestation of "scab." I cannot but think that this is partly due to the excessively wet and cold autumn and winter of 1912. The damage has not resulted from frosts, as we never registered more than about 20° all the winter. *A. J. Elgar, Killarney House Gardens, Ireland.*

Actinidia chinensis. — This interesting Chinese climber, which was introduced by Mr. E. H. Wilson, is flowering on the roof of the Himalayan House at Kew. A figure of the male form, which is also the one flowering at Kew, formed the subject of the Supplementary Illustration in the *Gardeners' Chronicle,* July 31, 1909. The flowers on the Kew plant are exceedingly attractive, being a deep glistening buff or pale apricot 1½ to 2 inch across, and produced on stalks at least one inch long. There are other plants at Kew in the open, but these, so far, have not flowered. A. chinensis, however, has flowered in the open at Messrs. Jas. Veitch and Sons' Coombe Wood Nursery and elsewhere in this country. *A. O.*

Dangers of the Elm.—Besides shedding large branches, as stated in the *Gardeners' Chronicle* last week, Elms growing in a clay soil will sometimes suddenly fall down in very hot, still weather. This is due to the fact that the roots are very weak, having many large vessels, so that a thin slice cut across the root looks somewhat like a sieve. The clay contracts with the heat, makes wide cracks, and so breaks the roots across. Big Elms are particularly liable to be blown down in a strong gale from a similar reason. The roots run very horizontally at no great depth and often to a great length, as I have noticed by the lines of suckers from the roots broken from a tree which fell in my field in Ealing some years ago. *George Henslow.*

The National Tulip Show (see p. 388).—Although, I suppose, the letter from the Rev. Joseph Jacob is intended to be a mild arraignment of the report of the recent show, printed on p. 374, in reality it confirms the accuracy of what I stated. Mr. Jacob says that the "growers of the Florist Tulip are a very small body, and no one ever expected what the public would call a big show." Just so; a society which numbers about a score of members, of whom practically only four competed at their annual show, cannot be said to be exuberantly successful. It would be interesting to know how many subscribers the society possessed, and the number of exhibitors, say, 25 years ago, and to compare the numbers with those of to-day. As many of us know, Mr. Jacob is a Tulip enthusiast, and enthusiasts look at their pets through rosy glasses; but to the outsider, who proverbially sees most of the game, the Florist's Tulip is slowly dying. If the society wishes to flourish it must take some pains to educate the general garden lover. At the recent show hundreds of visitors went into the little tent, solemnly looked around, and came out just as wise as when they went in. The spectacle of Tulip blooms arranged on show boards did not appeal to them. What did they know, or care for that matter, of bizarres or byblœmens or roses? Probably not one in a hundred had ever heard of the terms "rectified," "feathered" or "flamed," nor was any effort made by the society to enlighten them. What a glorious opportunity they lost. At every exhibition of the *live* societies—the R.H.S., the N.R.S.—dozens of new members are enrolled. Some member of the society is ready and willing to give any possible information concerning his society and its aims, and to "rope in" new members. But although I paid several visits to the N.T.S. tent I saw "nothing doing." It is not that the public have no interest in Tulips; the exhibits of Darwin's Cottage varieties and of species at Chelsea, and previously at Vincent Square, evoked the unstinted admiration of great numbers of visitors. Because they understand these Tulips, not that they are so much more beautiful; they have been "educated up to them" by the R.H.S., by the nurserymen and in the public gardens. *Your Reporter.*

Rose Saw-Fly.—Three seasons ago I was visited with the Saw-fly pest, which attacked the Rose trees in these gardens and almost entirely spoiled them. I did not at first recognise the source of the marks upon the leaves, so I sent a few specimens to the *Gardeners' Chronicle* enquiry office. I was told that the trees were infested with the above-named pest, and as almost every leaf had been more or less attacked I cut off every scrap of the foliage and removed it. The next year the foliage grew again healthy and vigorous; but in June the pest once more appeared, and on my applying to a friend for advice I was told to remove all the top soil and burn it, replacing it with fresh earth, at the same time applying "Woburn Tobacco Extract" to the trees. I did not entirely follow out the above advice; instead of having the soil removed I stirred it continually, and all the winter I dispensed with manure litter, which I had previously used extensively. After the pruning in March I syringed the trees with Woburn mixture about once a week; and up to the present I have seen no signs of the pest, the Roses being particularly healthy. I have come to the conclusion that the chief cause of the trouble was the use of manure, and should be glad to know if any of your readers concur in this opinion. *Ernest Horsley, Langford Hall Gardens, Newark.*

Early Cabbage (see pp. 365, 388). — By the time Mr. Harris had finished planting we were on the point of cutting, so that my success was much better than in "cold, bleak Hindhead." I maintain that for early cropping there is nothing so good as well-established autumn-sown plants; they should be put in not later than the second week in October We always follow the first batch by a later one, and sow again in the spring for summer supplies. We also sow for autumn supplies, and finish up with Coleworts, which last until the early spring varieties are available. Many gardeners who saw our main-crop beds this year said they were the best they had ever seen. With reference to manure, I consider that by far the best is that from the farmyard. Nitrate of soda and superphosphate are useful as stimulants, but would be of little use on clay soil, especially in wet weather, such as that of March last. I think, in conclusion, that your correspondent would do well to plant in autumn for spring supplies. We maintain a supply of good Cabbages and other kinds of Brassica all the year round. *W. A. Cook, Leonardslee Gardens, Horsham.*

Plants in Flower at Leonardslee.—There are some very beautiful and interesting plants in flower here just now. Leptospermum Nichollsii is flowering freely on a wall; the bright red blooms are most attractive, and I think this plant is bound to become popular. Billardiera longiflora also grows on a wall, facing south, and is doing splendidly. Leptospermum lævigatum is a mass of bloom; it is a white species, and makes a very pretty contrast with the red. Carpentaria californica is flowering well, and Olearia nitida is covered with blooms. O. Gunniana, O. pannosa, O. myrsinoides, and O. macrodonta are all in flower in the open, and doing well. Dendromecon rigidum is in full bloom. Crinodendron Hookerianum does best when fully exposed. Fabiana imbricata has flowered better this year than I ever remember; we have single plants 5 and 6 feet high which are magnificent. Grevillea rosmarinifolia is a mass of rosy-red flowers, and is well worthy of a place in any garden. We have a large plant (10 feet high) of Abutilon vitifolium, with innumerable lilac-coloured blooms, which is really beautiful. A. vexillarium is also flowering very well. Celmisia Mackaui, C. spectabilis, C. hieracifolia, C. grandiflora, C. Munroi, C. holosericea, and C. verbascifolia are all in full bloom, their large white flowers forming a beautiful contrast to the silver-grey foliage. Lewisia rediviva, L. Cotyledon, L. oppositifolia, and L. Howellii have stood the winter wonderfully well, and are now flowering with the utmost freedom. They do very well on a newly-made moraine. Philesia buxifolia is covered with its pretty crimson flowers, and is particularly handsome and effective. Viburnum tomentosum Mariesii is quite a picture with its heads of pure white flowers. These will be followed later by berries of a rich coral red, which are conspicuous from a con-

siderable distance. Mutisia decurrens is in flower; the colour and form of this species are somewhat like those of a Gerbera. Omphalodes cornifolia is looking very pretty and doing well. On a large boulder in the Alpine garden a collection of Arctostaphylos is flowering very happily. Several rare Veronicas are in blossom and looking extremely beautiful. Rhododendron hirsutum and R. h. album are in full bloom, and R. ferrugineum, R. cinnabarinum, and R. C. var. blandfordiæflorum have flowered better than ever this season. Callistemons (Metrosideros) are flowering very freely. A specimen of Solanum crispum, nearly 20 feet high, is a perfect mass of flowers, and so is Adenocarpus anagyrus. *W. A. Cook, Leonardslee Gardens, Horsham.*

NURSERY NOTE.

J. PIPER & SONS.

PIPERS of Bayswater is a well-known name in the florists' world, their establishment in the Bishops Road dating from 1845. More recently the firm has entered the field as nurserymen and growers, with nurseries at Barnes and Feltham, and have engaged specially in the raising and growing of Alpines and hardy flowers. So successful has the venture proved that Messrs. Pipers have already a reputation for hardy plant novelties, and they have gained several Awards of Merit at recent R.H.S. meetings. The establishment at Barnes, which we had the pleasure of visiting recently, is close to the beautiful common and within a short distance of the London and South-Western Railway station. It was originally a small, local nursery, known as The Gunyah, and includes nine glasshouses, which are well adapted for the raising and growing of plants. Our attention was first directed to the fine plants of Wistaria which Messrs. Pipers imported recently from China, and which were much admired at the R.H.S. Chelsea show. They were sent overland by way of Siberia, and, after a journey of two months, arrived in a splendid condition in the native earthenware vases. The trees have since grown and flowered well, some of them proving distinct varieties. The largest specimens measured 9 feet in height and were nearly as much through, the gnarled and twisted trunks giving an appearance of old age. But the Wistaria soon puts on a venerable aspect, and the Oriental gardener, by confining the roots in a small receptacle, makes growth appear stunted and weird. Nothing could offer a greater contrast between formal and informal methods of training than Wistarias and clipped shrubs, which occupy a considerable space at the Gunyah nursery. There has been a revival of topiary planting during late years, and Messrs. Pipers have a considerable trade in clipped evergreens. The specimens we saw were exceedingly good examples of this fashion of training, some of the more notable plants being in the form of pedestals, vases, jardiniers, spirals, archways, and the usual birds and animals.

In the various glasshouses, frames and nursery ground are 50,000 Alpines in pots. We noticed large stocks of Primulas of all descriptions, including most of the newer Chinese species. Of P. Cockburniana there were large batches of plants in all stages; also the purple-flowered P. Veitchii with its distinct foliage. Others included P. pulverulenta, a good garden plant, with rosy-crimson flowers; P. Bulleyana, which has fine orange-salmon coloured flowers; P. involucrata, a species that grows well by the waterside; P. sikkimensis, with pendulous flowers of a sulphur-yellow colour; P. capitata, with mealy foliage throwing the purplish-blue flowers in relief; P. frondosa, which has bright mauve-coloured blossoms, with stems and foliage white with farina; P. rosea, a gem for the damper spots of the rock-garden; P. japonica, P. longifolia, and many others. P. suffrutescens is an interesting sub-shrubby species bearing lilac-coloured blooms. The firm possesses a fine strain of P. viscosa hybrids which originated at Miss Willmott's gardens, Warley; altogether there are some 2,000 plants of these beautiful flowers at Barnes.

Pans of hardy Cypripediums included C. Calceolus, C. spectabile, C. acaule, C. pubescens, C. macranthum, and C. japonicum, and close to these were healthy plants of Dodecatheon, including the purple-flowered D. media and D. Jeffreyi, which has rosy petals. Mimulus primuloides is an interesting creeper, growing not more than 4 inches high, and bearing solitary, yellow blooms. The Pratias, of which P. angulata (white) and P. ilicifolia were noticed, have pretty berries in autumn, and their flowers are also attractive. Wahlenbergia saxicola is one of the finest Alpines in cultivation, for it blooms continuously from June until the flowers are destroyed by frost in autumn. The plants of this species were just throwing up their inflorescences of white flowers that are faintly flushed with blue. W. vincæflora bears light-blue flowers on slender stems, and grows freely in any well-drained soils. We noticed a large collection of various Saxifrages, including Saxifraga aizoon rosea, which bears its spike of rosy-pink blooms above a rosette of silvery leaves; S. Elizabethæ, with clear yellow flowers; S. pyramidalis; S. bathoniensis, a mossy variety with crimson-scarlet flowers; S. R. W. Hosier, that forms a carpet of light-green foliage, which is hidden in May by the clear crimson flowers; and S. Clibranii, another fine, crimson-flowered variety.

The beautiful Viola gracilis was represented by several improved varieties; Grandeur is later and has larger flowers than the type, whilst Glory is of a much darker shade, the petals being like purple velvet. Two others, Dream and Golden Wave, bear yellow blossoms. Piper's Black is one of the darkest forms of this Alpine Violet. The choicer species and varieties of Campanula offer handsome subjects for the flower garden and rockery, and Messrs. Piper's collection includes most of the best Harebells in cultivation. Among those that are rare or especially good were noticed C. Stevensii, a dwarf plant, that sends up a profusion of pretty blue flowers early in the spring; C. garganica hirsuta alba, with spreading, star-like blooms; and C. pusilla "Miss Willmott," a pretty lavender-coloured variety, that blooms in July.

Amongst the many other interesting plants which we noticed especially were Onosma alboroseum, the tubular flowers having a faint rose blush; Auricula Alexandra, a free-flowering variety of lemon-yellow colour; Lobelia linnæoides; Androsace primuloides, bearing rosy-lilac coloured flowers; A. cylindrica; Claytonia Caroliniana, a pink-flowered species; Chieranthus Allionii, a dwarf Wallflower bearing orange-coloured flowers; Dianthus petraeus fl. pl., a double form of this white mountain Pink; D. Napoleon III., a hybrid with double crimson blossoms; D. salmonea, a salmon-coloured form of the last-named; Gypsophila libanoticus, which has prostrate branches that bear pink blooms, the plant appearing as a glorified form of G. repens; Gentiana verna, which was growing and flowering splendidly in pots half-filled with drainage materials (the plants were collected in Sligo in 1912); Æthionema armenum Warley hybrid; Aubrietias in great variety, the two finest being Bonfire, with mauve-purple petals, and Excelsa, a fine shade of purple; Aubitilon vitifolium; Helichrysum frigidum, with prostrate stems bearing dark grey foliage; Lithospermum intermedia (pale blue); Linaria concolor, of prostrate growth; L. pallida, a beautiful wall plant bearing rose-coloured flowers; Cystus purpureus; Matthiola fenestralis, a shrubby species, with richly coloured flowers, the shade being a satiny magenta; Lychnis Lagascæ, a pretty rock plant, of compact growth, with rosy-carmine blossoms; Linum alpinum; Malva Olbia, which received the R.H.S. Award of Merit recently (the purple-pink flowers measure 3 inches across); Prunella incisa rubra; Phlox subulata "Vivid," with pink petals set off by a deeper-coloured eye; the white Ourisia macrophylla, and Omphalodes Lucillæ, a rare species, that has very pale opal-blue flowers.

Many other interesting species and varieties might be enumerated, but we have mentioned sufficient to show the wealth of choice plants that this small nursery contains. Mr. Sharp, the manager, is an enthusiast of this phase of gardening, as well as a remarkably skilful cultivator.

AUSTRALIA.

LATHYRUS TINGITANUS.

REFERRING to my inquiry for seeds of Lathyrus tingitanus—(p. 85, February 2)—I have to thank Messrs. Sutton and Sons for having sent me some, also for sending seeds of L. azureus, L. pratensis, and L. spathulatus; these have all germinated and will thus be available for hybridising next spring. I failed to obtain any seed whatever from what I call my first generation hybrid—although I pollinated its flowers with pollen from L. pubescens and both grandiflora and Spencer types of L. odoratus; also in the reverse crosses pods formed on L. pubescens, but they failed to mature. This may have been due to the flowering season being practically over, and in the hope that it is so I am now pollinating the early autumn bunches of L. pubescens with pollen from L. odoratus. *Gilbert Errey, Hazeldene, Victoria, Australia.*

MARKET GARDENING.

I CANNOT understand why nurserymen and market gardeners are content to stay in England. A Chinaman here informed me that he makes extraordinary profits by market gardening. Fruit is very dear in this country; indeed, Tasmanian Apples are much cheaper in England than in Australia. Potatos have realised £18 per ton; a grower cut 37,000 Cabbages in one year from 4 acres of land, and they sold wholesale at 7d. each. The crops are sprayed with water obtained from artesian wells. New South Wales and South Australia are the two best countries. *Colonial Gardener, Adelaide.*

AMERICAN NOTES.

SCARCITY OF LABOUR IN AMERICA.

As bearing upon the scarcity of labour in some of the American nurseries, Mr. MacElwee, superintendent of the Fairmont Farms, Fairmont, West Virginia, U.S.A., sends us a letter received in April last from Messrs. Peter Henderson & Co., of New York. Mr. MacElwee states that he has been moderately well suited with labour since the letter was written, but in contrast with the conditions in this country, as indicated by the advertisements for gardeners' positions printed from week to week in the *Gardeners' Chronicle*, he desires to draw attention to the great demand for such men in America. The enclosed letter is as follows.—

"Dear Sir,—We are in receipt of your favour of the 22nd inst., but there is not much chance of our being able to send you a couple of young men. We have inquiries for quite a number of journeymen gardeners at $35.00 to $40.00 per month and board, and cannot get them. A greenhorn can get $35.00 and board immediately he arrives in the city without any trouble. Should we see any likely men within a reasonable time we will try and arrange with them to go to Fairmont Farms."

KEW NOTES.

HARDY WATER-LILIES.—Hardy Nymphæas in full flower in the Lily-pond suggests the middle of July instead of the first week in June, and shows what is possible with slightly-heated water. The pond, which was made in 1897, lies in an apparently natural hollow or depression, which is really an old gravel pit made water-tight with clay. It is fed with waste water and condensed steam from the neighbouring pumping station, and throughout the year the water is always slightly tepid. The Lilies are planted in mounds of soil resting on the clay bottom. In all there are some 25 or 26 clumps or large plants, a yard to 10 feet across.

IRIS SIBIRICA.—Several groups of Iris sibirica, the Siberian Flag, are particularly attractive by the side of the lake. They are planted along the edge of the water in long narrow groups of fifty or more plants. Each plant or clump is about 2 feet 6 inches high, and each bears from 12 to 20 or more inflorescences of the pretty lilac-blue and violet flowers.

AESCULUS PLANTIERENSIS. — This hybrid Chestnut is flowering near to the large Temperate House in the Chestnut collection, and the tree promises to prove of considerable decorative value. It is a hybrid between the Common Horse Chestnut (Aesculus Hippocastanum) and the red-flowered Aesculus carnea. The tree was obtained from the nursery of M. Simon Louis at Plantiere in 1900. The flowers are flesh-pink with a splash of red in the centre of each bloom. As the tree does not produce fruits, this hybrid will be of value for planting in public parks and gardens.

DIPELTA VENTRICOSA.—This is an interesting and pretty hardy deciduous Chinese shrub. The genus Dipelta is nearly related to the Diervillas (Weigelas) and Loniceras (Honeysuckles). D. ventricosa is a freely-branched shrub growing at Kew, about 4 feet high. In Western China Mr. Wilson found bushes 15 to 18 feet high at 8,500 feet elevation. The flowers are produced singly in the axils of the leaves, and in terminal racemes of five, six, or more flowers on slender stalks. The corolla is tubular, 1 inch long, rose-pink outside, the interior being white with orange-coloured markings. The short growths bearing the flowers are borne along practically the whole length of the previous year's growths.

THE RUMPENHEIM LILAC.—This tree, which is of considerable historic interest, is flowering profusely on a small lawn in front of Kew Palace. When Cambridge Cottage was placed at the disposal of the Board of Agriculture and Fisheries by His Majesty the late King Edward, to be used as a Forestry Museum, the grounds attached to the residence were opened to the public. Within these grounds were two Lilac trees, which years before had been brought from Rumpenheim-on-the-Main, near Frankfort, the famous Palace of the Landgrave Frederick of Hesse. By the desire of Queen Mary, who is his great-granddaughter, one of the trees was moved to Frogmore in 1905. The other was transplanted on the lawn of Kew Palace in 1907. The tree has a clean, thick stem, 4 feet high and 2 feet in girth. The Rumpenheim Lilac is just a slightly dark-coloured form of the Common Lilac, Syringa vulgaris. *K.*

PUBLICATIONS RECEIVED. — ***Cyclamen and How to Grow Them,*** by F. C. Edwards (F. C. Edwards, Sholebroke, Leeds). Price 1s.—***Income Tax Simplified,*** by Arthur Fieldhouse and E. Ewart Fieldhouse. (London: Simpkin, Marshall & Co.) Price 1s.—***The Food of Some British Wild Birds,*** by Walter E. Collinge. (London: Dulau & Co., Limited.) — ***Plantae Wilsonianae.*** An enumeration of the woody plants collected in Western China for the Arnold Arboretum, by E. H. Wilson. Edited by Charles Sprague Sargent. (Cambridge: University Press). Price $2.50.

SOCIETIES.

LINNEAN.

JUNE 5.—The President, Prof. E. B. POULTON, F.R.S., announced that he appointed the following to be Vice-Presidents for the ensuing year:—Sir FRANK CRISP, Bart., Mr. HORACE W. MONCKTON (Treasurer), Prof. A. C. SEWARD, and Dr. A. SMITH WOODWARD.

The President exhibited eight coloured slides taken by the Paget colour process, of Lepidoptera *in situ.*

He also showed a remarkable case of mimicry where a wasp was mimicked in habit and method of flying by a reduviate bug and a Locustid.

Mrs. LONGSTAFF exhibited a striking specimen of synanthy in the Foxglove, which had grown in Dr. Longstaff's garden. Whilst recalling the specimen shown by Sir FRANK CRISP on June 15, 1911, it had a larger and more open terminal and synanthic flower.

Mr. HORACE W. MONCKTON, Treasurer, showed a flower of Sisyrinchium angustifolium, Mill., which had been found on Dartford Heath a short time before.

Mr. C. H. WRIGHT recalled other localities where this alien had been gathered.

Miss L. S. GIBBS gave an abstract of her paper entitled "A Contribution to the Flora and Plant-Formations of Kinabalu and the Highlands of British North Borneo," illustrating her remarks with a series of lantern-slides.

The last paper, by Prof. R. J. HARVEY GIBSON, M.A., on Mystropetalon, Harv., was briefly explained by Dr. STAPF. The material was sent by Mrs. Solly of Sir Lowry's Pass as M. Thomii, but was found to differ; the rhizome was attached to roots of Protea. A very intractable brown deposit in the cells is not "Balanophorin," but some unknown carbohydrate of the cellulose group, for which the name "Mystrin" is proposed. The male and female flowers are described, and the name of M. Sollyi proposed for the new species.

SCOTTISH HORTICULTURAL.

JUNE 3.—The monthly meeting of this Association was held in the Goold Hall, 5, St. Andrew Square, Edinburgh, on the 3rd inst. Mr. King, the President, was in the chair and there was an attendance of 56 members.

A paper on "Soil Knowledge" was read by Mr. JAMES K. BROWN, Dunnikier Gardens, Kirkcaldy. The author pointed out that humus cannot directly serve as plant food, but that the quantity of it in the soil is an indication of its fertility. The products of the decomposition of humus, however, are highly important to the plant, and its physical properties cannot be overlooked. The work of preparing the food material of the plant is performed by bacteria. As a result of their activity carbonic acid gas, which is harmful, is formed, and therefore fresh air must be provided in the soil by proper working. A fertile soil is not merely made up of so many independent chemical substances; its fertility depends on the presence of these organisms, and a soil which is devoid of germ-life is infertile.

The exhibits were as follow:—12 varieties of May-flowering and Darwin Tulips, from Mr. R. H. COCKBURN, Gartmore Gardens, Perthshire; Lobelia and Fortin's variety of Lily-of-the-Valley, from Mr. JAMES BRUCE, Davidson's Mains; and some of the newer varieties of Viola cornuta from Messrs. TODD and Co., Edinburgh. Mr. BRUCE was awarded a Cultural Certificate for his plants of Lily-of-the-Valley.

At the meeting on July 1 the premiated papers in the essay competition for juniors are to be read.

The chairman referred to the recent death of Mr. John Methven, who was president of the Association in 1884, and also to that of Mr. John Anderson, who was an office-bearer in the Association for many years.

EDINBURGH BOTANICAL.

The seventh meeting of the current session of the Edinburgh Botanical Society was held recently in the Royal Botanic Garden, Sir Archibald Buchan-Hepburn, the President of the Society, in the chair.

A paper by Mr. ALEXANDER P. STEVENSON, communicated by the Secretary, gave an account of the life of William Gardiner, a native of Dundee, who wrote *The Flora of Forfarshire,* published in 1848. Mr. H. F. TAGG read a paper on the occurrence of Agaricus melleus, Vahl, on gooseberry bushes in fruit plantations in Kent. Professor BAYLEY BALFOUR exhibited a large and interesting series of photographs of Chinese primulas, cultivated in the Royal Botanic Garden, and also a series of photographs of dried specimens of the great majority of the species known from China.

A specimen of Polygonum calcatum, Lind., gathered on Arthur's Seat, Edinburgh, was shown on behalf of Mr. C. E. Moss, D.Sc., this being a new record for Great Britain for this plant. Mr. R. C. DAVIE gave an account of a new locality near Eisenach, Germany, for Teucrium montanum, Linn., which is generally distributed over Central Europe and Asia Minor.

Included in the exhibition of plants in flower from the Royal Botanic Garden, Edinburgh, were:—

Primulas—P. Bulleyana, G. Forrestii, P. Forrestii, Balf. fil., P. geraniifolia, Hook. fil., P. lichiangensis, G. Forrest, P. luteola, Rupr., P. membranifolia, Franch., P. pinnatifida, Franch., P. sinolisteri, Balf. fil., P. sino-mollis, Balf. fil. (a new introduction raised by Mr. J. C. Williams from seeds collected by Mr. George Forrest in Yunnan), P. Veitchii, Duthie, also the two beautiful hybrids P. Edina (Bulleyana × Beesiana) and P. Inverleith (Bulleyana × pulverulenta).

Meconopsis—M. aculeata, Royle, M. Delavayi, Franch. (a new introduction flowered for the first time in cultivation, raised from seed collected by Mr. George Forrest for Bees, Ltd.), M. grandis, Prain (one of the few perennial species), M. Henrici, Bur. et Franch. (the plant came to Edinburgh from the Royal Gardens, Kew, and this is probably the first flowering in cultivation), M. horridula, Hook fil. and Thoms., M. punicea, Maxim., M. racemosa, Prain, M. rudis, Prain, M. simplicifolia, Walp., M. sinuata, Prain, var. racemosa, M. Wardii, Prain (a new species flowered for the first time in cultivation, raised from seed collected by Mr. Kingdon Ward for Bees, Ltd.).

Also the interesting Japanese plant Pteridophyllum racemosum, Sieb. et Zucc., a curious Fumariaceous plant with pinnatisect, fern-like leafage and spray of white flowers.

EDINBURGH ROYAL BOTANIC GARDEN GUILD.

JUNE 4.—The first annual general meeting of the above society was held in the Lecture Hall, Royal Botanic Garden, Edinburgh, on the 4th inst. Mr. W. W. Smith, M.A., assistant keeper, occupied the chair.

The CHAIRMAN stated that in February last the formation of the Guild was suggested, a provisional committee was formed, rules were drafted and circulated to all present and past members of the gardens whose addresses were known. The present meeting had been called to approve of the work that had been done, and, if possible, initiate the Guild.

Mr. R. L. HARROW proposed that the meeting agree to form a guild. Mr. W. SMITH, superintendent of Holyrood Palace Gardens, seconded, and the proposition was carried unanimously.

The rules as submitted to the meeting were adopted.

The following officers were elected:—President: Professor J. B. Balfour, F.R.S., Regius Keeper; Vice-Presidents: Messrs. W. W. Smith, M.A., Assistant Keeper; and W. Smith, Holyrood Palace Gardens.

The members of the committee were also appointed. Mr. H. F. Tagg was elected Hon. Editor; Mr. Samuel Stewart, Assistant Head Gardener, Treasurer; and Mr. W. H. Morland, Secretary.

The meeting decided that the Annual General Meeting and Dinner should be held in November, about the same time as the Royal Scottish Horticultural Society's Chrysanthemum Show. It was also agreed to hold two or three meetings annually, when lectures would be delivered by the members, the same to be published in the Guild Journal

GHENT HORTICULTURAL.

JUNE 1.—The monthly meeting of this Chambre Syndicale des Horticulteurs Belges and the Société Royale d'Agriculture et de Botanique de Gand was held on Sunday, June 1, in the grounds of the Casino. Certificates of Merit were awarded for the following Orchids :—To M. JULES HYE DE CROM, for Miltonia Hyeana var. J. Hye de Crom and Miltonia Schröderæ; to M. J. DE HEMPTINNE, for Cattleya Canhamiana alba var. Augusta and Odontoglossum pescatorei var. maculata; to M. F. LAMBEAU, for Odontioda Lulettia, Cattleya Mossiæ var. Bijou d'Or, Odontoglossum eximium var. Thalia, Odontoglossum Président Henin, Miltonia vexillaria robusta, Cattleya Mossiæ "Blue Bird," and Odontoglossum mirum "Emperor of India."

Among the new plants shown, other than Orchids, M. L. DE SMET-DUVIVIER received an Award of Merit for an Anthurium hybrid obtained from a cross between A. Scherzerianum and A. Andreanum, and for Hæmanthus Eetveldeanus. In the third section, a Certificate for culture and freedom of flowering was awarded to the same firm for two plants of Astilbe rubella, and a Cultural Certificate was awarded to M. L. GYSELINCK FILS for Nicholsonia Kozakiana, Thrinax parviflora, Dæmonorops intermedius and Licuala spinosa. M. BRAECKMAN was awarded Certificates for collections of sixteen varieties of Heuchera and thirty-two varieties of cut flowers respectively. Among the fruits shown was a collection of Apples Marie Joseph d'Othée, for which MM. MICHELS FRERES, of Montaigu, received an Award of Merit.

ROYAL COUNTIES AGRICULTURAL.

JUNE 10-13.—The annual show of the Royal Counties Agricultural Society took place on these dates at Windsor, and included a number of horticultural exhibits in a special tent.

Gold Medals were awarded to Messrs. SUTTON AND SONS, Reading, for a collection of vegetables, also Melons, Begonias, Cinerarias, Gloxinias, Primulas, Clarkias and other flowers; Messrs. R. WALLACE AND CO., Colchester, for a collection of hardy flowers, including fine spikes of Eremuri surrounded by seedling Heucheras and other border subjects; Messrs. DOBBIE AND CO., Edinburgh, who showed a collection of Sweet Peas and Aquilegias; Messrs. JOHN WATERER AND SONS, Bagshot, for a group of flowering shrubs, including Rhododendrons; Messrs. H. B. MAY AND SONS, Edmonton, for Ferns; Mr. CHARLES TURNER, Slough, for Carnations and Roses; Mr. E. G. HICKS, Twyford, Berkshire, for Roses; Messrs. TOOGOOD AND SONS, Southampton, for a collection of vegetables and grasses; Messrs. E. W. KING AND CO. for Sweet Peas; Messrs. W. CUTBUSH AND SON, Highgate, for miscellaneous flowers; Messrs. STUART, LOW AND CO. for Orchids and Carnations; Mr. AMOS PERRY for hardy plants; Mr. A. F. DUTTON, Iver, Buckinghamshire, for Carnations; Messrs. J. PIPER AND SONS for a rockery and clipped shrubs; and Mr. G. PRINCE for Roses.

Silver Medals were awarded to Messrs. JOHN KING AND SON for Sweet Peas, which included fine flowers of the variety Prince Edward of Wales; Messrs. S. BIDE AND SONS, Farnham, for Sweet Peas; Messrs. FLETCHER BROTHERS, for miscellaneous flowers: Messrs. KELWAY AND SON, Langport, for Pæonies; Messrs. B. LADHAMS, Shirley, for hardy flowers: and Messrs. JARMAN AND CO., Chard, for cut flowers.

Obituary.

AMOS PERRY.—We regret to record the death of Mr. Amos Perry, nurseryman, which took place on Tuesday last at his home at Enfield. He had not enjoyed good health for two years, and death resulted from heart failure, following Bright's disease and dropsy. Mr. Perry was born on September 22, 1841, and started life in the scholastic profession, but after serving his apprenticeship as pupil teacher his health failed, and his medical adviser told him to leave this country. Instead of doing this he secured employment in Messrs. Wingfield's nursery, Gloucester, adopting the profession of his forebears—his grandfather was a foreman at Messrs. Veitch's nursery, Exeter, and his father was Rose-grower at Messrs. Ware's nursery, Tottenham. He stayed only a short time at Gloucester, and he returned home, finding work under his father at The Hale Farm Nurseries. Mr. Perry remained with the firm of Messrs. T. S. Ware for twenty-five years. He became a partner in the firm, which then consisted of Messrs. Ware, Fells, and Perry. Mr. Perry was amongst the first to recognise the great value of hardy flowers. He made a collection of all the best subjects he could secure, and entered a group at one of the meetings of the Royal Horticultural Society. But hardy plants were not in favour; the superintendent of the show, Mr. Eyles, was disinclined even to find space for them, but finally allotted room in an out-of-the-way corner amongst the exhibits of sundries. Mr. Perry continued to work amongst his favourite flowers, and made journeys to the Continent in search of novelties. He visited the Pyrenees in 1870 and brought home many interesting plants, including Ramondia pyrenaica alba, Primula integrifolia alba, Gentiana verna alba, a double-flowered Gentian, which, however, did not survive the journey, and Anthericum liliastrum major. Mr. Perry severed his connection with his old firm in 1894, and commenced a business on his own account at Winchmore Hill, where he engaged in Carnation growing. But the soil of the nursery was unsuited to these plants, and he turned again to his favourite hardy plants and Alpines. So successful was his business that the Winchmore nursery became too small, and he removed to 30 acres of ground at Enfield. Amongst the many plants which Mr. Perry introduced to commerce are those following :—Echinacea purpurea Winchmore Hill var.; Phlox canadensis Perry's var.; Spiræa rivularis gigantea, Chrysanthemum maximum grandiflorum, Achillea Perry's White, Sparaxis pulcherrima, Anchusa italica Perry's var.; Spiræa venusta, Helenium pumilum magnificum, Aster Amellus Perry's Favourite, the first pink variety of this flower. He received numerous awards for novelties in Irises, Poppies, Geums, Heucheras, Delphiniums, Phloxes, Asters and other hardy flowers. Mr. Perry retired from active work in the business some two years ago, and during his leisure he has raised thousands of seedling Liliums, Sparaxis, Delphiniums and Poppies in his garden. At one time he contributed articles to the horticultural Press, and many contributions from his pen have been published in these pages. He leaves a widow, two sons, and three daughters; both sons are engaged in the business, which will be carried on under its present name. The funeral took place at Enfield Cemetery on the 13th inst.



FIG. 175.—THE LATE AMOS PERRY.

LAW NOTE.

FLOODING OF AN EDINBURGH MARKET GARDEN.

THE gardens belonging to Mr. W. B. Hanley, Restalrig Gardens, Edinburgh were flooded in July and October, 1909, and he raised an action against the Edinburgh Corporation in November of that year for damages amounting to £200. Lord Ormidale awarded Mr. Hanley £150 and expenses, but the Second Division of the Court of Session reversed this decision, with expenses. Mr. Hanley appealed to the House of Lords, which has reversed the decision of the Second Division with costs against the Corporation. In the Court of Session on June 5 the Court granted a petition to apply the judgment of the House of Lords. It is believed that the costs payable by the Edinburgh Corporation will amount to between £4,000 and £5,000.

TRADE NOTE.

Mr. COLIN WILSON, nurseryman, Rothesay, has transferred his business of market gardener and nurseryman to William Hamilton Shankland, who will carry on business under the name of Colin Wilson and Company.

GARDENING APPOINTMENTS.

[*Correspondents are requested to* **write the names of persons and places as legibly as possible**. *No charge is made for these announcements, but if a small contribution is sent, to be placed in our collecting Box for the* **Gardeners' Orphan Fund**, *it will be thankfully received, and an acknowledgment made in these columns.*]

Mr. D. R. COOMBE, for the last 2½ years Foreman at Frensham Place, Farnham, Surrey, as Gardener to W. A. R. HOARE, Esq., "Colehays," Bovey-Tracey, South Devon. [Thanks for 2s. for the R.G.O.F. box.—EDS.]

Mr A. DUNKLEY, for nine years Gardener to the late Mr. SHEEPSHANKS, Stokelake House, Chudleigh, Devonshire, as Gardener to Miss WOODHULL, Norton Park, Tewkesbury.

MARKETS.

COVENT GARDEN, June 11

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general averages for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—EDS.]

Cut Flowers, &c.: Average Wholesale Prices.

	s.d.	s.d.
Arum (Richardias)	2 0	2 6
Carnations, per dozen blooms, best American varieties	1 9	2 0
— smaller, per doz. bunches	15 0	18 0
— Carola (crimson), extra large	3 0	4 0
— Malmaison, p. doz. blooms:		
— — pink	4 0	6 0
Cornflower, blue, per doz. bunches	0 9	1 3
— pink	—	1 6
— white	1 6	
Eucharis, per doz.	2 6	—
Forget-me-nots, per doz. bunches	2 0	2 6
Gardenias, per box of 15 and 18 blooms	1 6	4 0
Gerberas, per doz. blooms	1 0	1 6
Gladiola, Akerman	6 0	8 0
— The Bride	6 0	8 0
— Blushing Bride	5 0	8 0
— Ne Plus Ultra, per doz. spikes	1 0	1 3
— Peach Blossom	6 0	8 0
Gypsophila, white	3 0	6 0
— pink	3 0	4 0
Iceland Poppies, per dozen bunches	1 6	2 0
Iris, Spanish, per dozen bunches	5 0	7 0
Lilium auratum, per bunch	4 0	4 6
— longiflorum, per doz., long	1 0	1 3
— — short	1 0	1 3
— lancifolium album, long	2 0	—
— — short	2 6	—
— — speciosum		
— rubrum, per doz., long	1 6	2 0
short	1 0	1 3
— candidum, per bunch, long	1 3	1 6
per doz. short	1 0	1 3
Lily of the Valley, per dozen bunches:		
— extra special	15 0	18 0
— special	12 0	14 0
— ordinary	9 0	12 0
Mignonette, per doz. bunches	5 0	6 0
Nigella (Love in a Mist), per doz. bunches	2 0	2 6
Orchids, Cattleya, per doz.	9 0	10 0
— Cypripedium	3 0	—
— Odontoglossum crispum	2 0	3 0
Pæonies, per doz. bunches of 6 blooms	6 0	8 0
Pancratiums, per doz.	2 0	2 6
Pelargoniums per dz. bunches white	3 0	4 0
double scarlet	6 0	8 0
Pinks: white, Her Majesty, per doz. bunches	1 3	1 6
Pyrethrum: single coloured per dozen	2 0	2 6
— double white	2 0	3 0
Roses: Caroline Testout	1 6	2 0
— Catherine Mermet	1 0	1 6
— CountessDerby	2 6	3 6
— Frau Karl Druschki	2 0	3 0
— Général Jacqueminot	0 9	1 0
— Innocence	2 0	2 6
— Joseph Lowe	1 6	2 0
— Kaiserine	1 6	3 0
— Lady Hillingdon	1 0	1 6
— Liberty	1 0	3 0
— Madame A. Chatenay	1 3	2 6
— Maryland	0 9	1 0
— Niphetos	1 0	1 6
— President Carnot	2 0	2 6
— Prince de Bulgaria	3 0	4 0
— Richmond	1 0	2 6
— Rose Queen	3 0	4 0
— Sunburst	1 3	2 6
— Sunrise	0 9	1 0
— W. A. Richardson	1 0	1 6
Spiræa, per doz. bunches	5 0	6 0
Stephanotis, per 72 spray	1 3	1 6
Sweet Peas, per dozen bunches:		
— white	3 0	6 0
— coloured	3 0	8 0
Stock, double white, per doz. bunches	5 0	6 0
Tuberoses, per gross	6 0	8 0

Cut Foliage, &c.: Average Wholesale Prices.

	s.d.	s.d.
Adiantum Fern (Maidenhair), best, per doz. bunches	3 0	4 0
Agrostis (Fairy Grass), per doz. bunches	2 0	4 0
Asparagus plumosus, long trails, pr. ½doz.	1 6	2 0
— medium, doz. bunches	12 0	18 0
— Sprengeri	10 0	12 0
Carnation foliage, doz. bunches	3 0	—
Croton foliage, various, dz. bnchs.	12 0	15 0
Cycas leaves, artificial, per doz.	3 0	12 0
Eulalia japonica, per bunch	1 0	1 6
Moss, gross bunches	6 0	—
Myrtle, doz. bnchs. (English), small-leaved	6 0	—
— French	1 0	—
Smilax, per bunch of 6 trails	1 0	1 3

Plants in Pots, &c.: Average Wholesale Prices.

	s.d.	s.d.
Aralia Sieboldii, dozen	6 0	7 0
Araucaria excelsa, per dozen	18 0	21 0
Asparagus plumosus nanus, per dozen	10 0	12 0
— Sprengeri	8 0	9 0
Aspidistra, p. dz., green	21 0	30 0
— variegated	30 0	60 0
Cacti, various per tray of 15's	4 0	—
— various, per tray of 12's	5 0	—
Clerarias, p. doz.	8 0	9 0
Cocos Weddelliana, per dozen, 9/6	6 0	12 0
— larger, each	2 6	10 6
Croton, per dozen	18 0	30 0
Cyperus alternifolius, p. doz.	5 0	6 0
— laxus, per doz.	4 0	5 0
Dracæna, green per dozen	10 0	12 0
Ferns, in thumbs, per 100	8 0	12 0
— in small and large 60's	12 0	20 0
in 48's, per doz.	6 0	—
Ferns:		
— choicer sorts, per doz.	8 0	12 0
in 32's per doz.	10 0	18 0
Ficus elastica, per dozen	9 0	12 0
Fuchsias	7 0	9 0

Plants in Pots, &c.: Average Wholesale Prices (cont.)

	s.d.	s.d.
Crassulas, per doz. 48's	12 0	18 0
Geonoma gracilis, 60's per dozen	6 0	8 0
— larger, each	2 6	7 6
Heliotrope	7 0	8 0
Hydrangeas, white	12 0	18 0
— pink	9 0	15 0
— blue	12 0	30 0
Kentia Belmoreana, per dozen	5 0	42 0
— Fosteriana, 60's, per dozen	4 0	6 0
— — larger, per dozen	18 0	63 0
Latania borbonica, per dozen	12 0	30 0
Lilium lancifolium rubrum per dz.	18 0	21 0
Lilium lancifolium alba, dozen	18 0	21 0
Lilium longiflorum per dozen	15 0	18 0
Lily of the Valley	18 0	21 0
— 48's, per doz.	21 0	30 0
Marguerites, in 48's per doz., white	6 0	10 0
Mignonette	7 0	8 0
Pandanus Veitchii, per dozen	36 0	48 0
Pelargonium	10 0	12 0
Pelargonium (Geranium), double scarlet, 48's	4 0	5 0
— other varieties	5 0	6 0
— — 48's various	4 0	6 0
— — 60's various	2 0	2 6
— — Ivy-leaved	6 0	10 0
Phœnix rupicola, each	2 6	21 0
Rambler Roses, ea.	6 0	15 0
Saxifraga pyramidalis	15 0	18 0
Spiræa japonica, per dozen pots	6 0	8 0
— pink	10 0	12 0
Stocks, all colours	8 0	10 0
Verbena Miss Willmott, 48's, per dozen	5 0	6 0
Verbenas, King of Blues, per doz. 48's	6 0	8 0

French Flowers: Average Wholesale Prices.

	s.d.	s.d.
Marguerite, yellow, per dozen bunches	1 9	2 0
Statice, mauve	3 0	4 0

Fruit: Average Wholesale Prices.

	s.d.	s.d.
Apples, French Russets, box	10 6	11 6
— Australian and Tasmanian		
— Australian case	12 6	16 0
— Cooking varieties, per case	12 6	15 0
— Cox's Orange Pip in, cases	20 0	25 0
Apricots, per box	1 6	4 6
Bananas, bunch:		
— Doubles	8 6	11 0
— No. 1	7 0	8 0
— Extra	9 0	10 0
— Giant	12 0	14 0
— Loose, p. doz.	0 6	1 6
— Red coloured	4 6	5 6
— Jamaica, pr ton	£9	£12
— Jamaica Ordinary, per box (9 doz.)	5 0	5 6
Cherries, English, per peck	6 0	8 0
— French, per ½ bushel	11 0	13 0
— per strike	6 6	8 6
— per Boxes	2 0	3 6
Cranberries, p. case	9 0	9 6
Dates, per dozen	2 9	3 0
— Egyptian, cwt.	25 0	—
Gooseberries, per ½ bushel	4 0	4 6
— per peck	2 0	2 6
Green Figs	1 6	8 0
Grape Fruit, case:		
— 96's	16 0	22 0
— 80's		
— 64's		
— 54's		
Grapes:		
— Australian, per case	26 0	33 0
— English:— Canon Hall Muscat	4 0	8 0
— Muscat of Alexandria	4 0	8 0
— Black Hamburgh, per. lb.	1 6	3 0
Limes, per case	5 0	6 0
Lemons, Messina, per case	13 6	34 0
Naples, p. case	24 0	30 0
Mangoes, Cape, dz.	6 0	8 0
Melons English, each	1 3	3 0
— Guernsey	1 3	2 6
French Canteloupe melons, each	3 6	12 0
Nectarines, doz.	4 0	24 0
— Belgian	4 0	12 0
Nuts, Almonds, bag	52 6	—
— Brazils, cwt.	54 0	62 0
— Spanish, sack	40 0	42 6
— Barcelona, bag	35 6	36 0
— Cocoanuts, 100	18 0	23 0
— English Cobs, per lb.	0 3	0 4
— Chestnuts, bg.	14 0	26 0
— Walnuts, French, p.cwt.		
— Naples, p. cwt.	64 0	—
Oranges:		
— Seville, sours, case	18 0	20 0
— Messina, bitters, case	8 0	9 6
— Jaffa, per case	8 6	9 0
— Murcia	17 0	24 0
— Denia, per case	26 0	45 0
— Palermo Blood	9 0	10 0
Peaches, English, dozen	4 0	21 0
— Belgian, dozen	4 0	12 0
Pears:		
— Tasmanian, case	10 0	12 0
— per bundle of 3 boxes	15 0	20 0
Pineapples, St. Michael	3 6	4 6
Strawberries, French handles	5 0	7 0
— First quality per lb.	2 0	4 0
— Second quality	1 0	2 0
— Southampton baskets, chip	3 6	4 0

Vegetables: Average Wholesale Prices.

	s.d.	s.d.
Asparagus, English special quality, per bundle	3 0	6 6
— English, per bundle	1 6	2 6
— ½ bundles	0 5	0 6
— Sprue, bundle	0 6	1 0
Artichokes (Globe), per dozen	1 6	2 0
— ground, ½ bus.	1 6	—
Batavia, per doz.	2 0	—
Beans:		
— Guernsey, lb.	0 9	1 0
— English, per lb.	0 9	1 0
— French, brd. pad	3 6	4 0
— English broad per bushel	2 6	3 0
Beetroot, p. bshel.	2 6	3 0
— bags	4 6	5 0
Cabbages, p. tally	2 0	3 0
Carrots (English) pr. doz. bun.	2 6	3 0
— French, dozen		
— Round	8 0	9 0
— Long	6 0	8 0
— unwashed, per bag	2 0	2 6
Cauliflowers, per doz.	2 6	4 0
Celeriac:		
— French, p. doz.	4 0	4 6
Chicory, per lb.	0 2	0 4
Cucumbers, per dozen	3 6	4 6
Endive, per dozen	2 0	2 6
— French, p. doz.	3 0	3 6
Greens, per bag	1 0	1 3
Garlic ... strike	2 6	—
Horseradish, 12 bundles	10 0	12 0
Leeks, per doz.	2 0	2 6
Lettuce, French, Cos, per dozen	4 0	5 0
— English, Cos, per doz.	0 9	1 0
Lettuce, English round, p. doz.	0 6	1 0
— Dutch, per doz.	10	1 0
Marrows, dozen	4 0	5 0
Mint, per dozen bunches	3 0	5 0
Mushrooms, cultivated, per lb.	10	1 0
— Broilers	0 6	0 7
Outdoor per lb.	0 4	0 6
Mustard and Cress, per doz. punnets	0 10	1 0
Onions, picklers, per ½ bushel	2 6	3 0
— (spring), per doz. bunches	2 0	3 0
— (Spanish), case	6 0	7 0
— Egyptian, bags	4 0	4 6

Vegetables: Average Wholesale Prices (cont.)

	s.d.	s.d.
Peas, English, p. lb.	1 0	1 3
— White, per bushel	3 0	4 0
— Blue, per bushl.	4 0	6 0
Guernsey	1 0	1 3
— French, pad of 10 lb.	5 0	6 0
— Guernsey, p.lb.	1 0	1 3
Parsley, per doz. bunches	2 0	3 0
Radishes (French), per dozen	1 6	2 0
— English, p. doz.	10	1 3
— Guernsey	0 9	1 0
Sage, per dozen	2 0	—
Spinach, p. bushel	1 6	2 0
Tomatos, English, per dozen lbs.	5 6	6 6
— Seconds, per dozen lbs.	2 0	2 6
— Guernsey, per dozen lbs.	4 6	5 6
Thyme, per dozen bunches	1 6	2 0
Turnips (English), per dozen bunches	2 0	3 0
— bags	3 0	—
— French, new, dozen bunches	7 0	8 0
— unwashed, bag	2 0	3 6
Watercress:		
— dozen	0 5	0 6

REMARKS.—The last shipment of Australian Apples and Pears comprised some 100,000 cases. The Pears included the varieties Doyenne du Comice, Winter Nelis and Josephine de Malines. The Apples consisted principally of the variety Sturmur Pippin. Supplies of Grapes show a steady increase from all sources. English hothouse Peaches and Nectarines are very plentiful, whilst consignments of these fruits are also received from Belgium and Holland. Melons, including the Canteloup variety, continue a good supply. There are plenty of Green Figs in the Market. The last of the indoor Strawberries will be sent this week; Strawberries from out-of-doors are arriving from the Southampton and Kent districts in larger quantities than was anticipated. French Strawberries continue a good supply. Cherries and Apricots from the Continent are not so numerous as in some former years. There are a few fruits of English-grown Early Rivers' Cherries. Oranges and Lemons continue to be scarce. Gooseberries have been received in increased quantities during the past week. A few French Plums are on sale. Large quantities of Tomatos are available daily. Mushrooms are more plentiful. English-grown, out-of-door Peas are a heavier supply. Asparagus is sufficient for the demand, and there is a good supply of all the commoner vegetables in season. *E. H. Rides, Covent Garden, June 11, 1913.*

Potatos.

	s.d.	s.d.		s.d.	s.d.
German per bag	5 0	6 6	Scotch (grey soil) per bag	6 0	6 6
Dunbar ,,	7 6	8 0			

New Potatos.

	s.d.	s.d.		s.d.	s.d.
Cherbourg, p.cwt.	10 6	11 0	St. Malo, per cwt.	11 6	12 0
Jersey ,,	12 6	13 0	Spanish ,,	10 0	10 6
Lisbon, per case	5 0	5 3	Teneriffe ,,	10 0	11 0

REMARKS.—There are only a few old tubers available, from Germany and the Dunbar district. The prices for New Potatos are well maintained; both the trade and the supply is fair.—*Edward J. Newborn, Covent Garden and St. Pancras.*

THE WEATHER.

THE FOLLOWING SUMMARY RECORD of the weather throughout the British Islands, for the week ending June 7, is furnished from the Meteorological Office:—

GENERAL REMARKS.

Weather.—In the earlier half of the week the weather was fair or fine over the greater part of England, but generally unsettled and rainy in Ireland, Scotland, and Wales. Later on changeable conditions extended over the entire kingdom, but in our eastern and southern counties the showers were slight, and were interspersed with considerable periods of bright sunshine. Thunder was heard on the 4th at many north-western stations, and thunderstorms or thunder only occurred on the 5th and 6th at a large number of places situated in the northern and eastern districts.

Temperature was below the average in most of the western and southern districts, but above it in the north, eastern, and central parts of Great Britain. The highest readings occurred between the 2nd and 4th, when the thermometer rose to between 72° and 75° in most of the English and Scottish districts, and reached 78° in Scotland East (at Gordon Castle); in Ireland it did not exceed 68°. The lowest readings occurred mostly on the 1st or 2nd, and ranged from 34° in England South-West and 35° in Scotland East to 40° in England South-East, and to 44° in Scotland North and the English Channel. On the surface of the grass the lowest temperatures were 26° at Wisley and 29° at Greenwich, Blackpool and Newton Rigg. At a depth of both 1 foot and 4 feet the temperature of the soil was a trifle below the average in most of the western districts, but above it elsewhere.

Mean temperature of the sea.—On the British coasts the water was, in most places, warmer than in the corresponding week of last year, but around Ireland it was rather cooler, and on our western coasts generally it was below the average. The actual values ranged from 59° at Seafield and 58° at Eastbourne to 49° at Lerwick and Berwick, and 47° at Wick.

Rainfall was in excess of the average in the western and northern districts, largely so in Scotland North and Ireland South. Over the greater part of England it was less than the normal. At Alnwick Castle the fall on the 6th amounted to as much as 1.4 inches.

Bright sunshine exceeded the normal in nearly all parts of Great Britain, but was deficient in Scotland North and also in Ireland. The mean daily duration ranged from 8.1 hours (48 to 49 per cent. of the possible duration) in England North East and North West to 4.3 hours in Ireland North and to 3.3 hours (only 19 per cent. of the possible) in Scotland North.

Barometer and wind.—During the first half of the period the conditions over England were influenced by a large anticyclone whose borders extended eastwards from the Continent, while in Ireland and Scotland the weather was affected by a cyclonic disturbance which moved slowly north-eastward between Scotland and Iceland on the 2nd and 3rd, and afterwards dispersed. The prevailing winds were southerly or south-westerly, and on our western and north-western coasts they blew with considerable strength, a gale being reported on the 2nd in the northern parts of Ireland and Scotland. On the 4th and 5th the central area of a large depression passed in a north-easterly direction across our western and northern districts, and in its rear a strong wind from west or north-west sprang up on our western coasts. Towards the close of the week, when a disturbance of considerable intensity for the time of year again travelled north-eastward between Scotland and Iceland, strong to high winds from the south-westward and westward were experienced over the United Kingdom generally, and gale force was reached on several of the more exposed parts of our coasts.

MAY.

Warm, rather dry, and sunny.—This was on the whole a warm May. During the first three weeks the temperatures were about seasonable, but the last 10 days proved exceptionally warm for a spring month, the highest reading in the thermometer screen on six consecutive days rising above 75°. On the warmest day the temperature in the same screen rose to 79½°, which is, with three exceptions, the highest reading I have yet recorded here in May during the last 27 years. On the coldest night the exposed thermometer registered 7° of frost, a rather high extreme minimum reading for the month. Rain fell on 11 days, and to the total depth of 1¾in., which is about ¼in. in defect of the May average. The sun shone on an average for 6¾ hours a day, or for half an hour a day longer than the mean duration for the month. The winds were light, and in no hour did the mean velocity exceed 14 miles—direction S.E. For only 144 hours altogether, or six days, did the wind come from any point of the compass between north and east. There was about a seasonable amount of moisture in the air at 3 o'clock in the afternoon.

THE SPRING.

Warm, wet, and sunless.—This proved on the whole a warm spring. March and May were both warm months, while April, on the other hand, was rather cold. The total rainfall for the quarter exceeded the average by an inch, March and April being wet and May rather dry. Taking the season as a whole the mean duration of sunshine fell short of a seasonable quantity by about 20 minutes a day. April proved very gloomy, the mean daily duration being as much as 1¼ hour below the usual quantity for that month. *E. M., Berkhamsted, June 4, 1913.*

THE WEATHER IN WEST HERTS.

Week ending June 11.

A showery and windy week.—During the past week the weather has remained seasonable in temperature, both during the daytime and at night, and as a rule with very little change from day to day. The ground has become cooler, and is at the present time 2° colder at 2 feet deep, and 3° colder at 1 foot deep, than is seasonable. Some rain fell on all but two days, but to the total depth of only about ½ inch. On each day a few drops of rainwater came through the bare soil percolation gauge, but none at all has come through that on which short grass is growing, for nearly a month. The sun shone on an average for six hours a day, which is about the average daily duration for the beginning of June. The first two days were rather calm, but since then the wind has been as a rule high, and at times very high for the time of year. In the windiest hour, on the 10th, the mean velocity rose to 20 miles—direction S.W. Throughout the week the wind has come almost exclusively from some point of the compass between south and west. The average amount of moisture in the air at three o'clock in the afternoon exceeded a seasonable quantity for that hour by 5 per cent. *E. M., Berkhamsted, June 11, 1913.*

Answers to Correspondents

ADDRESSES : *G. E., Australia.* Mr. Frank Banning, Kinsman, Ohio, U.S.A.; Messrs. J. Burrell and Co., Howe House Nurseries, Cambridge.

APPLE TREE : *Enquirer.* The trouble is not due to disease, but is most probably the result, as you suggest, of injury by lightning.

CANON HALL MUSCAT GRAPES : *H. H.* We suspect that the vine is planted at the end of the vinery, where, from one or more of several possible causes, there is only a sluggish circulation of air in the early morning and the condensed water remains for a long time on the tips of the leaves. You will observe that it is these tips which are first affected. When, later in the day, the sun's rays reach these water-laden tips, the top ventilators being open, evaporation is so rapid that it causes a chill in the same way as when the ventilation of a house is neglected until after the temperature has risen considerably. The remedy is to have a small ventilator at the lower corner to allow a slight ingress of air when the upper ventilators are opened. The movement of air thus caused will dispel the moisture and prevent the damage. Extra hot-water piping at this corner would answer the same purpose. It frequently happens that the ends of houses are not adequately provided with means for ventilation. We have known damage similar to yours happen when the end of a vinery has been shaded by a high wall or by trees sufficiently to prevent the sun reaching that part before ten or eleven o'clock in the morning. Canon Hall Muscat Grape is a robust grower, and more likely to suffer injury from this cause than less vigorous varieties because it takes a longer time to become warmed throughout, while the temperature of the atmosphere has perhaps risen twenty or more degrees. The rapidity of evaporation from the leaf surface when the upper ventilators are open is governed by the difference of temperature between the atmosphere and the plant.

CHRYSANTHEMUMS DISEASED : *E. D.* The injury is caused by thrips. Spray the plants thoroughly with tobacco water.

COLOUR SCHEME FOR FLOWERS : *J. S. K.* You do not state how you intend to employ the three plants, whether mixed, or as we assume, thus :—Papaver Mrs. Perry, Geum Mrs. Bradshaw, Dianthus neglectus. We think the first and second varieties would harmonise, though risky, but we are dubious about the second and third.

GERMAN IRIS : *H. E. K.* The Iris blooms have been destroyed by a bacterial disease present in the soil, which should be treated with superphosphate. Lime favours the disease.

GRAPES DISEASED : *G. C.* The berries are affected with Grape rot, caused by Gloeosporium ampelophagum. Remove all diseased berries, and spray every part of the vine and bunches thoroughly with a solution of sulphate of iron, 1lb. in 25 gallons of water. The spraying is most efficacious in the spring just before the buds open. The newly expanded leaves should be dredged with flowers of sulphur.

LIME-SULPHUR AND NICOTINE SULPHATE : *T. F. R. Lockwood.* Lime-sulphur is prepared as follows :—Take flowers of sulphur, 10 lbs.; stone lime, 10 lbs.; water, 50 gallons. Slake the lime slowly in about 3 gallons of water; add the sulphur, and stir occasionally. As the heat develops add more water, and when the lime is completely slaked dilute to 50 gallons with water. Nicotine sulphate is a chemical that may be purchased from the horticultural sundriesmen or commercial chemists.

MELONS DISEASED : *R. C.* Eelworm is present. It is a very difficult pest to eradicate and insecticides are of little avail. The best plan is to burn the plants, and remove the soil in which they have been grown, either sterilising it by baking or burying it deeply in some out-of-the-way part of the garden. The house should then be cleaned thoroughly with carbolic in solution, washing the woodwork with soft soap, carbolic acid and warm water. A correspondent in the *Gardeners' Chronicle*, July 8, 1911, page 7, recommends top-dressing pot plants with rape dust, which acts as an exterminator of eelworms and as a fertiliser of the soil at the same time. See also an article in the issue for July 13, 1912, page 30.

NAMES OF PLANTS : *T. H. R.* 1, Potentilla nepalensis; 2, Tiarella cordifolia; 3, Geranium Wallichianum var.; 4, Epimedium sp.; 5, Sedum spectabile; 6, Saxifraga Geum var. crenatum. — *W. H. B.* 1, Saxifraga Lindleyana; 2, S. muscoides atropurpurea; 3, S. Rhei; 4, Sedum obtusatum; 5, Veronica repens; 6, V. officinalis.—*G. G.* The variety of Rose (G. Goossens) resembles Conrad F. Meyer, but the bloom is a poor specimen.—*E. Tull.* 1, Saxifraga Hostii; 2, S. Geum crenatum; 3, S. cuneifolia; 4, Phlox lilacina: 5, P. subulata var.—*Dublin.* 1, Provence Rose; 2, Laburnum vulgare; 3, Ribes speciosum; 4, Asphodeline liburnica; 5, Lychnis dioica flore pleno; 6, Lathyrus luteus.—*A. F.* Chænostoma hispidum.—*W. L.* Rose Mrs. Edward Mawley.—*F. E. S.* Periploca græca. *Horticus, Yorks.* Chlorophytum comosum (see *Gardeners' Chronicle*, October 8, 1910, p. 261).—*B. H.* 1, Gongora gratulabunda; 2, Oncidium phymatochilum; 3, Aspasia epidendroides.—*J. A.* 1, Salvia coccinea; 2, Corydalis lutea pallida; 3, Gnaphalium margaritaceum; 4, Sempervivum arachnoideum; 5, Vittadinia australis (triloba); 6, Saxifraga ligulata.

PANSIES : *Enquirer.* Leafspot disease is present. If the plant is not in bloom spray with Bordeaux mixture made at half the usual strength. It would be wise to spray early next season in anticipation of the disease, which will probably appear again. There is no disease on the roots.

PEACH LEAVES : *A. W. D.* The leaves are affected with "curl." Cut off the affected shoots just below the diseased parts and burn them. — *B. C.* The Peach trees are attacked by the Shot-hole fungus (Cercospora circumscissa). Spray with ammoniacal solution of copper carbonate just as the leaves are expanding, and repeat the operation at intervals. A correspondent writing in these pages has stated that he has used Campbell's sulphur vaporiser with good results.

PEACHES UNHEALTHY : *E. M. McK.* No disease is present on the shoots to account for the trouble, which is probably due to some wrong conditions at the roots.

PHLOX AND PRIMULA UNHEALTHY : *A. W. D.* The plants of Phlox are attacked by eelworms. Treat the soil in which they have grown with quicklime, or, if obtainable, with gas lime. See reply to *B. C.* The Primulas are not diseased. The cause of their unsatisfactory condition is most probably due to some wrong method of culture.

PRIMULA SIEBOLDII : *J. M. L.* There should be no difficulty in getting this Primula to bloom freely, provided it is well treated during the growing season. It may be planted out during the summer months in light, rich compost, with plenty of gritty material to ensure a free drainage, as the roots require plenty of water whilst growing freely, but stagnant moisture is harmful. In some localities the plants will be benefited by a slight shade during hot weather, but shading should hardly be necessary in northern gardens. When the foliage dies down the clumps should be lifted and placed in pots, or shallow pans, of as small a size as will just accommodate them. The soil should consist of a light, rich compost, with the addition of well-decayed manure, such as may be obtained from a spent Mushroom bed. Grow the plants in a cold frame during the winter, but do not allow them to become excessively dry, as the roots are always active. Afford an abundance of air on all favourable occasions; the plants may be flowered in a cold frame or cold house. They should never be subjected to fire heat, or grown in a close, stuffy atmosphere. This Primula may be grown in pots all the season. The pots should be well drained, as the roots require an abundance of water during the growing season. The best position for them is under a wall where they will receive partial shade during the hottest part of the day; it will save watering, and also tend to keep the roots cool if the pots are plunged to the rim in ashes or fibre. It would be well to make a fresh start with new and strong stock. The two new hybrids, Primulas La Lorraine and Ville de Nancy, raised from P. cortusoides and P. Veitchii, give promise of being very useful and free-flowering pot plants for the cold greenhouse

VINES UNHEALTHY : *A. J.* We can trace no injury due to fungus or insect pests. The root action is checked by the presence of too much moisture in the soil.

Communications Received.—C. R.—E. B., Dorset—S. A. P.—R. H. N.—A. B. H.—A. J. M.—E. B. Horton—C. H. W.—W. H. B.—J. F. R., Godalming—K. H. B.—A. O.—P. A.—K. A.—G. C.—J. M.—E. W. B.—W. F. W.—E. F.—T. H. C.—F. H. F.—Newmarket.—R. P.—E. H. W.—A. G.—C. W.—A. P. B.—J. K.—W. M.—B.—T. S. W.

THE
Gardeners' Chronicle
No. 1,382—SATURDAY, JUNE 21, 1913

CONTENTS.

Agriculture, a tropical university for 423
Books, notices of—
Gardening 417
Illustrations of Conifers 417
Illustrations of the plants of Formosa... 418
The Ring o' Nature... 417
Bulb garden, the—
Calochorti 418
Celery "blight" or "rust"... 414
Fruit districts, inspection of 413
Fungicides for leaf curl 423
Helianthi in Hungary, experiments with ... 423
Hortensias, blue ... 422
Horticultural Club ... 427
Irises and Foxgloves ... 423
Irises, trial of 425
Lectures at South Kensington and Kew ... 423
National Health Insurance 424
Nymphæa gigantea Hudsoniana 423
Obituary—
Ewing, William, Sen. 432
Fraser, James... ... 432
Pilling, Charles Ernest 432
Winfield, H. T. W. ... 432
Orchid notes and gleanings—
Cypripedium bellatulum 416
Odontoglossum cologlossum, Thompson's var. 416
Pæonia L'Espérance ... 424
Pæony blooms, retarding 424
Perry, Amos, the late... 425
Plant collecting in China 418
Plants, new or noteworthy—
Lilium regale 416
Rhododendron cinnabarinum 425
Rothamsted experimental station ... 423
St. Petersburg, imperial botanic garden at ... 423
Saxifrages, a conference on 425
Schools, rural, manual work in 423
Seeds, the length of life of 423
Societies—
Horticultural Club ... 427
Royal Horticultural 425
R.H.S. Gardens Club 424
Yorkshire Gala ... 429
South Africa, notes from 419
Swiss horticultural exhibition 423
Tomato Italia 423
Trees and shrubs—
Small-leaved Rhododendrons 419
Tulips at Breslau ... 423
Week's work, the 420, 421
Yellowing in plants due to excess of lime ... 422

ILLUSTRATIONS.

Celery "blight" disease 415
Lilium regale 416, 417
Nymphæa gigantea Hudsoniana (Coloured Supplement)
Pæonia L'Espérance 424

INSPECTION OF FRUIT DISTRICTS.

Special Report by *"SOUTHERN GROWER."*

I.—EVESHAM AND PERSHORE.

IT was a relief to get away from the contemplation of disappointing results in my own orchards, if only to see whether I had fellows in misfortune in some of the principal fruit districts in the country. A further and more important object of my pilgrimage was to form some idea of the prospective supplies to the markets, by way of preparing for making sale contracts. Accordingly the second week in June was almost entirely spent in the Evesham and Pershore districts of Worcestershire and three of the principal fruit districts of Kent.

Previous experience had taught me that some of the best fruit trees would be found in the orchards of Mr. Henry Masters, who has about 100 acres under fruit. Busy man though he is (and his functions as Mayor of Evesham for the second year in succession are no slight additions to his business affairs), Mr. Masters gave up many hours to myself and a Suffolk grower who accompanied me, not only in conducting us through his own home orchards, but also in driving us to distant ones and to some held by his neighbours. His experienced foreman, Mr. Cox, accompanied us, and gave valuable information as to orchards visited and others not seen.

THE EVESHAM PLUM CROP.

It is hardly necessary to say that the Plum is by far the most important fruit at Evesham. Before starting on our round of the orchards Mr. Masters informed us that we should find the Pershore or Egg Plum the only variety in the district bearing even a fair crop. The Damascene, which stands second in importance in the district, had had its blossom almost entirely killed by frost, in consequence of the extreme earliness of the blossoming of this variety; while the Damson crop was very little less of a failure. Early Prolific, Orleans, and Curlew were described as nearly devoid of fruit, Czar was a small crop, and Victoria a passable one in some places and nearly a failure in others. Mr. Cox had noticed that the best crops of Plums on the few varieties which bore any were in low and sheltered parts of orchards. Inspection of the plantations fully bore out these generalisations.

Mr. Masters's home orchards, in the Bengeworth district, are on some of the best soil in Evesham. This is obvious from the immense size of the old trees. Some Damascenes, forty years old, are as big as the very largest of old standard Pears. In these orchards the vigour of the Plum trees and their freedom from the aphis blight which is almost universal were very striking. In these places, too, was found the only fair crop of Early Prolifics seen in the whole of our journeys. Considerable sprinklings of Czars and Victorias were noticed on a few trees here and there, and quite a big crop of Victorias showed in one sheltered spot.

Proceeding to the outlying orchards held by Mr. Masters, we found very few Plums at Wickhamford, except on the Egg variety, though there were sprinklings of Victorias in places. In the latter variety, an extraordinary increase of the silverleaf disease was noticed in all the districts visited: evidently one of the many bad legacies of a prolonged wet season. The prevalent aphis blight was to be seen upon the Plums in this orchard, though much less than was found common elsewhere.

The superior fruitfulness of the Egg Plum trees elicited a striking statement from Mr. Cox. If a grower of twenty acres of Plums, he said, planted five acres of the Egg and three other patches of five acres each of any other varieties, he would guarantee that in seven years from the beginning of the bearing age the first-named would buy up the three other varieties, although Egg Plums usually sell at very low prices. Moreover, Evesham and Pershore growers are strongly of opinion that other varieties grafted or budded on Egg stocks are greatly superior to the same when other stocks are used. The Egg Plum itself is grown from suckers without any grafting or budding.

In another orchard held by Mr. Masters at Longdon Hill there was on the lower portion of the ground the only good crop of Victoria Plums seen in the course of our travels, and even a sprinkling of Damascenes was also noticed, while some Czars were well loaded, and others not so.

In portions of orchards held by other growers the Plum crop, apart from that of the Egg variety, was an extremely light one. On the whole, the crop in the Evesham district is declared by growers to be one of the smallest ever produced. There was an abundant blossoming, and multitudes of fruitlets were set on all varieties except Damascenes and Damsons; but only a very small proportion swelled, the rest turned yellow and dropped.

OTHER FRUIT CROPS AT EVESHAM.

The Apple crop, according to Mr. Masters and another grower, met incidentally, is a very poor one, while the trees are badly affected with aphis blight. The principal Apple orchard held by Mr. Masters bore a great crop last year, and has very little fruit in it this season. In a neighbouring orchard belonging to another grower the trees are young, and Lane's Prince Albert is the only variety of Apple noticed as bearing a full crop in relation to the sizes of the trees. In another plantation held by Messrs. Shindler and Thorn the outlook varied. The aphis blight, as elsewhere, was very bad, in spite of spraying. But this orchard is very well cultivated and managed, and some full crops of King of the Pippins, Warner's King, Pott's Seedling, Stirling Castle, Newton Wonder, and some other varieties were seen. Bramley's Seedling, Early Victoria, and Lane's Prince Albert varied from poor to good. The Apple sucker has been troublesome here as elsewhere in the district. Powdery mildew is noticeable on some varieties. A good crop of Gooseberries was seen in this orchard, and a fair crop of Black Currants in a neighbouring one. By the way, extremely few Black Currants were seen. This fruit does not flourish very well in Evesham or Pershore, and is much less grown than it was some years ago. The Gooseberry crop in Evesham appears to be better than in some other parts of the country. Pears are almost a complete failure, and Cherries less than half an average crop. Mr. Masters and most other Evesham growers have good crops of Strawberries. No Raspberries were seen.

PLUMS AT PERSHORE.

Mr. G. F. Hooper was very obliging in showing my friend and myself some of the best orchards in Pershore, including his own, 40 acres in extent, and his neighbour, Mr. Davies, saved us much time by kindly conveying us from Evesham to Pershore, a distance of seven miles, in his motor-car. On the road between the two towns numbers of Plum and Damson trees quite devoid of fruit were passed, the former, for the most part, being badly injured by the aphis blight, which seems to be even more serious than at Evesham. Mr. Hooper has a fair crop of Victorias in parts of his orchards, and a good yield of Egg Plums. But Czar, Belle de Louvain, and Monarch have very little fruit upon them, and Damascenes are practically devoid of it. Loganberries are flourishing, and promise to crop well

Mr. Hooper is growing an experimental crop of tobacco, which has started well.

A fair crop of Czars was seen in part of a fruit farm of 80 acres held by Mr. Coates, while in another part the trees of this variety were badly infested with the aphis, and almost bare of fruit. Brown rot has done much damage to this variety, and Curlew is nearly as badly injured. Only a few Plums of the Victoria variety were noticed in places. A sprinkling of Monarch was found in one part of the farm.

In an orchard of 25 acres belonging to Mrs. Jones a fair crop of Egg Plums was seen, while there was a sprinkling of Victorias on most trees of that variety. Czar and Monarch were badly injured by aphis blight, and nearly devoid of fruit.

Other Fruits at Pershore.

At one time the Cherry was the most important fruit crop grown at Pershore; but very few Cherry trees are to be seen there now. The aphis blight on Apples is generally bad in the district, and the Psylla, on the wing at the time of our visit, has also done much damage. A fair crop of Gooseberries was seen in one of Mr. Coates's orchards, and a very poor one in another grower's plantation. No Currants or Raspberries, and only one piece of Strawberries were found in the Pershore orchards visited, but all three fruits are reported to be of fair promise. Pears are almost fruitless, as a general rule.

An Important Object Lesson.

Very striking evidence as to the advantage of spraying Apples* and Plums with lime-wash, as thick as it can be got through the spraying machines, was obtained in Mr. Hooper's orchards. In one portion of the farm all the Apple and Plum trees had been sprayed with this wash, nothing being added to the lime, except water, while they were left unsprayed in the rest of it. The lime-sprayed Apples and Plums were free from the aphis blight, while those not sprayed were very badly infested. If memory serves, the contrast applies also to Apple sucker infestation. At any rate, a mere glance was sufficient to allow any one to see it in relation to the aphis blight, and growers elsewhere to whom this striking case was named said that they had seen similar results from lime spraying. Mr. Hooper's explanation is that the lime coats over the eggs of the pests, and extracts moisture from them, thus destroying their vitality. Lime-wash must be strained before it is put into a spraying machine, and it is important to do the work only in dry weather, and to cover every twig. If rain occurs before the stuff has dried thoroughly on the trees, the lime is easily washed off; but it sticks on well after being dried. In the case under notice the spraying was done as soon as there was any sign of an attack by birds upon Plum buds. Apart from this attack, however, just before the buds approach the bursting stage is probably the best time to apply the lime-wash.

* Feeling a little uncertain as to whether the contrast between trees sprayed with lime-wash and those not sprayed in relation to aphis attack applied to both Plums and Apples, I have written to Mr. G. F. Hooper since this report was in type, and obtained his reply. He says it relates to Plums alone; but I understand that he has found it valuable for Apples also in previous years. If the lime-wash will kill the eggs of the Plum aphis, there appears to be no reason why it should not also destroy the eggs of the Apple aphis.

Summing Up.

Excepting the Egg variety, which bears a fair quantity of fruit, the Plum crop of Evesham and Pershore is one of the lightest ever grown; Apples, on the whole, appear to be no more than half an average; Cherries, barely so much; Pears, practically a failure; Gooseberries, Currants, and Raspberries, about up to average or only a little below that standard; and Strawberries from fair to good. Raspberries will need rain to enable them to fulfil their promise, and Strawberries also in some places.

CELERY "BLIGHT" OR "RUST" (*SEPTORIA PETROSELINI* VAR. *APII*) AND ITS PREVENTION.

THE disease, which is commonly called Celery "rust" by gardeners (though the fungus causing it is not a member of the Uredineæ) is one of comparatively recent appearance in this country. Other names which have been given to it are Celery "Leaf-spot" and "Leaf-scorch," and in America it is known commonly as the "Late Blight of Celery." Considering the general characteristics of the disease, the term Celery "Blight" may be advocated. It is stated to be a comparatively recent disease in the United States, and was first recorded there in 1891. It is now much feared in America by Celery growers, as it is found that when affected Celery is put into storage the disease may still progress and inflict considerable damage, rotting off the leaves. In 1908 a loss of 1,950 carloads of Celery (involving a money loss of $550,000) was caused by this disease in California alone. In this country the disease was first noticed about 1906. About that time, and for the following three or four years, a few examples of affected plants were sent to Wye College from places in various English counties where the disease was just beginning to appear. In the succeeding years the specimens sent in became more and more numerous, until in 1910, 1911 and 1912 some hundreds of "blighted" Celery plants were received, frequently accompanied by accounts of the almost complete destruction of the crop. Celery "blight" is now known in most places where Celery is grown, and I have found in lecturing that when the choice of the fungous diseases of vegetables to be dealt with is left to the audience, Celery "blight," or "rust," is invariably chosen.

As the disease has now become so widespread, and is the cause of severe losses to Celery growers, an investigation was made into the life-history of the fungus causing the disease, and experiments were devised to test the value of spraying. The work was carried out during 1912 in the experimental grounds of Wye College. Considering the nature of the disease, it seemed probable that those measures which are so successful in preventing Potato "blight"—viz., early spraying with Bordeaux mixture—would be efficacious against Celery "blight." The spraying experiments described below show that such is the case, and some striking results were obtained. A short description of the disease will be given first, and then an account of the preventive measures taken and the results obtained.

The first signs of the disease on the Celery plant are small, scattered, palish spots on the leaves; at this stage of attack the term Celery "Leaf-spot" is descriptive. On these pale spots numerous minute blackish bodies soon appear, which are just visible to the naked eye. These bodies are the fruit-conceptacles (pycnidia) of the fungus Septoria Petroselini var. Apii, which is the cause of the disease. Each conceptacle contains many hundreds of very minute thread-like spores (see Fig. 176), which serve to spread the fungus very rapidly if preventive measures are not taken. The pale spots are usually first noticed by the grower on the leaves at the end of July or beginning of August, but, as we shall learn from the facts given below, they are often present very much earlier. Later in the season—that is to say, during August and September—the disease increases in severity and becomes much more evident, for then the greater part of many of the upper leaves becomes affected, and over such diseased areas myriads of little black "dots" (the pycnidia) are visible on both surfaces of the leaf. Sooner or later the affected leaves begin to wilt, turn brown, and curl up at the edges (cf. Fig. 177). At this stage, which is most characteristic of the disease, the name Celery "blight" is seen to be very appropriate. (Through the general similarity of appearance of the diseases, I have known gardeners in several instances suppose that the Potato "blight" has passed on to their Celery, whereas, of course, the two diseases are quite distinct.) If affected plants be examined, it is found that the spawn (mycelium) of the fungus has extended from the leaves down the leaf-stalks, even to the blanched portions, and has formed innumerable black fruit-conceptacles on the surface. (See Fig. 178.)

If diseased plants are closely observed after warm, damp, "muggy" weather, the method of the dispersal of the spores from the pycnidia can easily be seen. Under such conditions it will be found that most of the pycnidia have opened, and that the spores are oozing out in an agglutinated mucous mass in the form of a little tendril, which is frequently curled round and round. (See Fig. 179.) This tendril-like mass of spores is whitish in colour and opalescent, and when in damp weather hundreds of conceptacles close together on a badly infected leaf or leaf-stalk emit their spores in twisting "tendrils," the first general impression of the observer is that there is an infestation of very minute curling worms on the surface of the plant. On a closer view,

of course—such as is obtained by the use of a 1s. pocket-lens—each worm is seen to be a "tendril" of spores projecting from the mouth of a pycnidium. If a "tendril" be picked off with a needle and laid on a glass slide under the microscope, the addition of a drop of water sets free the spores by dissolving the mucous substance that kept them together. Thus after

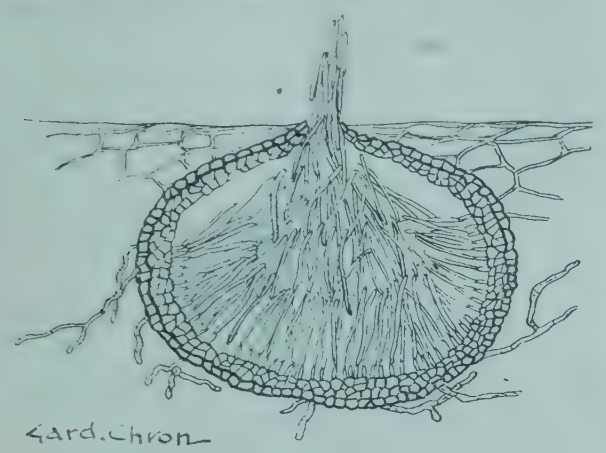


FIG. 176.—TRANSVERSE SECTION OF THE FRUIT-CONCEPTACLE (PYCNIDIUM) OF THE CELERY "BLIGHT" FUNGUS, SHOWING THE NUMEROUS THREAD-LIKE SPORES. (GREATLY MAGNIFIED.)

rain or heavy dew the spores are carried over the plant, and at once infect new leaves.

In accounts published previously in this country of the life-history, it has been stated that the disease occurs comparatively late in the season. Thus Mr. Chittenden concludes his interesting account of Celery "Leaf-spot" in the *Journal of the Royal Horticultural Society*, vol. xxxvii., p. 115, with the remark: "The disease is usually noticed rather late in the season, when it has attained proportions too great for any hope of checking it to be justified, but it seems,



FIG. 177.—LEAVES OF CELERY ATTACKED BY THE "BLIGHT." THE LEAF TO THE LEFT IS SLIGHTLY ATTACKED, THE ONE TO THE RIGHT HAS WITHERED OWING TO THE DISEASE.

as a rule, to make its appearance somewhat late in the growth of the plants. We have, however, had specimens sent us as early as July." Mr. Massee, also, in the brief account of the disease given in his book on Fungous Diseases, states: "It usually appears when the Celery is nearly ready for the market."

As a matter of fact, the disease is usually present on Celery plants quite early in the season, and—just as with Potato "blight"—if the grower wait until late in the season before applying remedies the case is hopeless. The erroneous idea of its late appearance on the plant (possibly strengthened by the American name of "Late Blight") has probably arisen from the fact that the evident "wilting" and death of the leaves do not take place usually until July, although an examination of the plants in June will generally show the presence of the parasite on many of the leaves.

From certain observations which have been published, there was, indeed, every reason to expect outbreaks of the disease quite early in the season. Thus Stevens and Hall, writing of the fungus as it is known in the United States, state in their book, "Diseases of Economic Plants": "The disease is often found in the

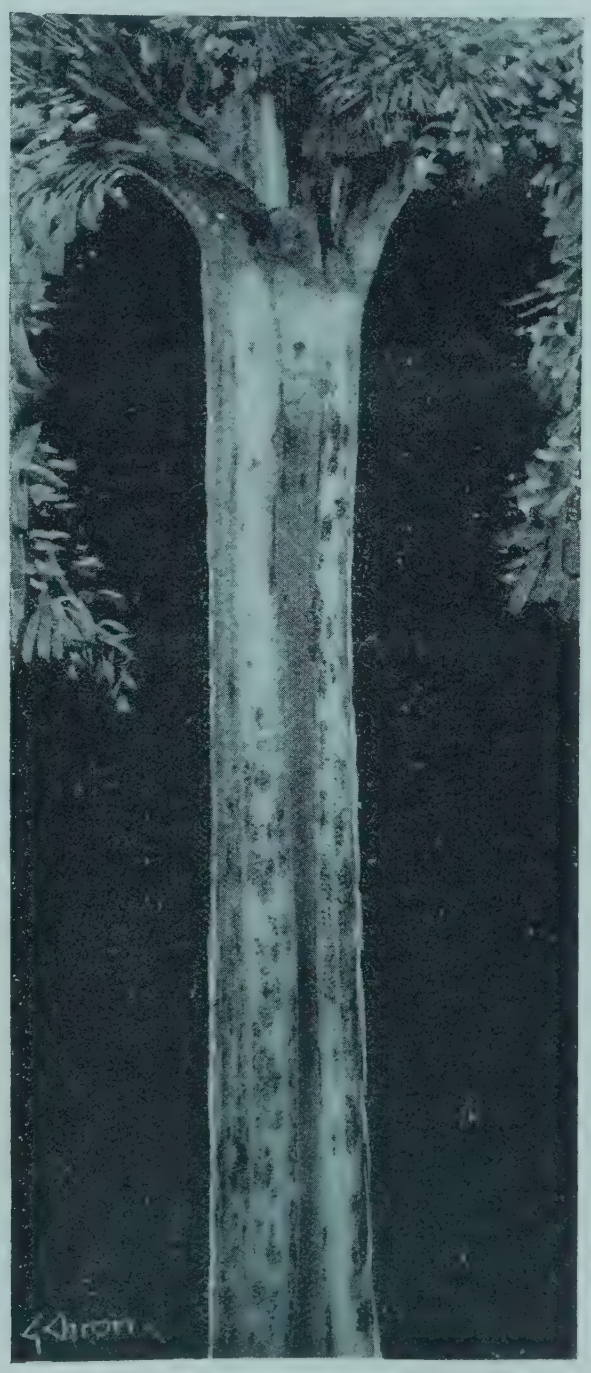


FIG. 178.—LEAF-STALK OF "BLIGHTED" CELERY, SHOWING THE FRUIT-CONCEPTACLES (PYCNIDIA) OF THE FUNGUS, SEPTORIA PETROSELINI, ON ITS SURFACE.

seed-bed, and is probably carried by the seed, since the pycnidia are abundant upon the seeding stalks and fruits." Mr. Chittenden has found that in this country, also, the fungus is being distributed with Celery seed. He writes (*l.c*): "Of 33 samples of Celery seed examined in the laboratory this spring 14 showed the pycnidia of the fungus upon the seeds or the pieces of stalk mixed with them, and microscopical examination showed these pycnidia in the majority of cases to contain spores still. Some of these diseased seeds had been grown in England, others on the Continent. At my request Mr. D. Finlayson kindly washed several samples of commercial Celery seed with distilled water, and microscopical examination of the washings showed the spores of the fungus in 50 per cent. of them. Klebahn has recently shown that washings from seeds saved from diseased plants contain spores of the fungus, and by spraying healthy plants with these washings

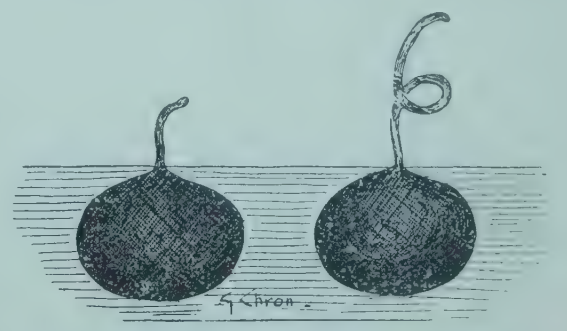


FIG. 179.—TWO FRUIT-CONCEPTACLES (PYCNIDIA) EJECTING THEIR SPORES, WHICH ARE AGGLUTINATED IN A TENDRIL-LIKE MASS. MAGNIFIED.

he has infected them with the disease. Indeed, he believes the sowing of seeds containing the spores of the fungus is the principal, if not the only, means of distributing the disease."

On examining a bed of seedling Celery plants at Wye College during the first week in May



FIG. 180.—A TERNATE-LEAF OF A SEEDLING PLANT (ABOUT SIX WEEKS OLD), "SOLID WHITE" CELERY, AFFECTED WITH THREE SPOTS OF DISEASE. NUMEROUS FRUIT-CONCEPTACLES (PYCNIDIA) OF THE CELERY "BLIGHT" FUNGUS, CONTAINING RIPE SPORES, WERE FORMED ON THESE SPOTS.

an interesting discovery, of considerable practical importance, was made. It was found that the disease was already present in considerable quantity, in the form of small, pale spots on



FIG. 181.—THE LOWER SURFACE OF THE SAME LEAF SHOWN IN FIG. 180. IT CAN BE SEEN THAT THE DISEASE-SPOTS EXTEND RIGHT THROUGH THE SUBSTANCE OF THE LEAF.

the ternate leaves of the young plants, which were about six weeks old. The diseased spots, about 5 mm. in diameter, which might be passed over as due to some insect attack, bore numerous black pycnidia filled

with the ripe spores of the Septoria. Each spot of diseased leaf-tissue, which was noticeably pale, was permeated by the fungus mycelium, and was dead or dying. These diseased areas extended right through the thickness of the leaf, from the upper to the under surface, as shown in Figs. 180 and 181, where Fig. 181 represents the same leaf as in Fig. 180, but turned over to show the lower surface. On both surfaces of the diseased area the pycnidia of the fungus occurred plentifully.

A number of different varieties of Celery had been planted out in an open frame, and on May 13 a careful examination was made of all the seedlings; the Septoria was found on the following varieties: Solid White, Clark's Early Market, Superb Pink, Giant Red, and Standard Bearer; it occurred also on Celeriac. The infestation was decidedly worst on the Solid White seedlings, a very large proportion of the plants having the disease. Some 1911 seed of Sutton's A1 (plants from which became badly diseased in 1911) and of Sutton's Superb Pink, and also some 1912 seed of Clark's Early Market, were examined to see if the fungus were present with the seed, but no trace of it could be found. Unfortunately, no seed of Solid White was available for examination. There is, however, the strongest presumptive evidence that the seedlings had become infected from spores present with the Celery seed that was sown—possibly with the Solid White seed. The facts reported by others, as noted above, strongly support the supposition, and indeed it would be almost impossible otherwise to explain the general infestation of these seedlings at the beginning of May. *E. S. Salmon, Mycologist to the South-Eastern Agricultural College, Wye, Kent.*

(*To be continued.*)

ORCHID NOTES AND GLEANINGS.

ODONTOGLOSSUM CALOGLOSSUM, THOMPSON'S VARIETY.

(O. VUYLSTEKEÆ × O. CRISPUM SOLUM.)

A FLOWER of this very distinct and richly-coloured Odontoglossum, raised at Walton Grange, Stone, Staffordshire, is kindly sent by Mr. J. Howes, gardener to William Thompson, Esq., who regards it as one of his best productions. The flower is of fine shape, the sepals deep claret-red with a very narrow, white margin, the petals similarly coloured with lighter tips, and the lip deep claret-red with a glossy surface, the tip and narrow margin being white. The crest is yellow with dark red lines, and the column dark purple. The influence of O. crispum Solum is very pronounced in the colouring and form of the labellum, which give to the flower a very distinct character, and make it one of the most beautiful of the dark-coloured hybrid Odontoglossums.

CYPRIPEDIUM BELLATULUM.

A TWO-FLOWERED inflorescence of this pretty Cypripedium, taken from a specimen with ten other flowers, is sent by Mr. H. Haddon, gardener to J. J. Neale, Esq., Lynwood Park Road, Penarth, with whom the plants thrive admirably and increase in size steadily, never failing to produce a good show of blooms. As many do not succeed with this plant and others of its section—niveum, Godefroyæ and concolor—it will be well to give Mr. Haddon's remarks:—"We grow our C. bellatulum in eight-inch pots, in rock-loam and lime rubble." This agrees with the statement made by the collector respecting the habit of the plant in the Shan States, where he found it growing on low hills in loam, among the undergrowth, or on rocks partially exposed to the sun. Most of the failures can be traced to the plants of this section being potted in porous material similar to that used for epiphytal Orchids; if a suitable compost be given success is easily attained.

NEW OR NOTEWORTHY PLANTS.

LILIUM REGALE.*

(SYN. L. MYRIOPHYLLUM HORT. NON FRANCHET.)

IT was with feelings of deep pleasure that I read Mr. Grove's appreciative remarks concern-



FIG. 182.—LILIUM REGALE, WILSON: FLOWERS WHITE WITH YELLOW CENTRE; EXTERIOR OF SEGMENTS MARKED WITH VINOUS-RED.

ing this Lily in the *Gardeners' Chronicle* of January 4, 1913. The weather experienced in England during the summer of 1912 was the very reverse of what obtains in the region where this Lily has its home. It is, therefore, all the more remarkable that it should have succeeded so well under the most trying of seasons. The enclosed photograph (see Fig. 183) may be of interest to the many readers of the *Gardeners' Chronicle* fond of Lilies, as showing how this Lily succeeded in Massachusetts, where drought instead of a deluge injured growth during the past summer. There is no necessity to add to Mr. Grove's word of praise. His knowledge of the family, and his ability to cultivate the numerous species, are only equalled by his sound judgment of their merits and demerits.

Perhaps the story of the Lilies depicted in the illustration may be worth telling. The bulbs, some six thousand, were dug in October, 1910, dried, packed, transported on men's backs and by riverway 2,000 miles across China to Shanghai. I accompanied them in a stretcher or on crutches. At this port they were shipped on board the s.s. *Empress of Japan* for Vancouver, B.C. From Vancouver they were carried by express freight train to Boston, Mass., where they arrived about April 20, 1911. The bulbs in due course were tumbled out of their cases into the ground and covered with soil. In July they produced a crop of flowers, and in October a crop of seeds, having safely gone through one of the driest seasons on record. After the seeds had been gathered the bulbs were dug up and planted. The winter of 1911-1912 was one of the most severe on record in this vicinity. The thermometer registered so much as 42° Fahrenheit of frost, and the ground was frozen for 10 feet down. The bulbs came through unscathed. The photograph here reproduced was taken on July 10, 1912, and in the November following a full crop of seed ripened. This is history and speaks for the constitutional vigour and hardiness of this Lily. It received no protection from the frost or sun, and was never given a drop of water other than that supplied by the clouds. L. regale is truly a royal Lily, worthy of a place in every garden; it is a lover of loam and sunshine.

In August, 1903, when travelling in Western Szechuan, I was privileged to discover this Lily. In 1904 I succeeded in introducing about 300 bulbs to the nurseries of Messrs. Veitch, where it flowered in the summer of 1905, and was named at Kew L. myriophyllum. Wrong names will get tacked on to plants, no matter how carefully the work of identification is done. Such mistakes are regrettable, but quite unavoidable, for reasons obvious to those familiar with the difficulties which the work involves.

Quite recently, through the courtesy of the Director of the Paris Museum, I have come into possession of a photograph and a fragment of the type of Franchet's L. myriophyllum. These are sufficient to show that Franchet's Lily and mine are two distinct species. The difference may be briefly tabulated as follows:—

L. myriophyllum Franchet.	*L. regale Wilson.*
Bulb as in longiflorum and Brownii, *i.e.*, oblate, white.	Bulb as in Sargentiæ, i.e., ovoid, scales acute, dark red-purple.
Leaves densely crowded, even to the very base of the pedicels. Three-nerved, below the flowers several-nerved.	Leaves densely crowded, sparse below the flowers, one-nerved, below the flowers usually three-nerved.
Flowers sub-erect, nearly tubular, only slightly spreading at the mouth. Pedicels very short, stamen-filaments glabrous.	Flowers horizontally spreading, funnel-shaped, wide-spreading at the mouth. Pedicels medium length, and stamen-filaments pubescent.

It will thus be seen that the differences are very considerable, and in the actual plants they are even greater than they appear in print.

I append the synonymy; the figure in the *Botanical Magazine* is excellent, and is accompanied by a full description. A description will also be found in *Flora and Sylva* 1. *c. E. H. Wilson, Arnold Arboretum.*

* Lilium regale, Wilson, in *Horticulture* XVI., p. 110, footnote (1912). Lilium myriophyllum, *Gard. Chron.* ser. 3, XXXVIII., p. 328 il. (1905) non Franchet.—Wilson in *Flora and Sylva III.*, p. 330, coloured pl. and fig. (1905) non Franchet.—Wright in *Bot. Mag.* t. 8102, exclud. synon. L. Brownii var. leucanthum (1906) non Franchet.—Grove, *Lilies*, p. 64 pro parte; in *Gard. Chron.* ser. 3, LI., 272, figs. 126, 127 (1912).

NOTICES OF BOOKS.

Illustrations of Conifers.*

The first two volumes of this useful work have been reviewed already in these pages.† The favourable impression made by those two volumes is renewed by the third, recently issued. Mr. Clinton-Baker hopes to issue a fourth, which will practically complete the illustration of the entire Coniferæ. In the case of the conifers pictorial representation is even more useful than printed description for purposes of identification. The illustrations in the present work are reproductions in natural size of photographs of cone-bearing sprays, and each is supplemented by a concise description. The two together should enable everybody to identify whatever species they may grow of this interesting but often puzzling family. The work has its basis in Mr. Clinton-Baker's fine pinetum at Bayfordbury, which has several times been noted in our columns. The majority of the illustrations in the first two volumes were of the hardiest species, and were made from material obtained from it. In this newly-published volume, which deals with a number of tender species, the author has had to go farther afield, and Ireland, France, Italy, Jamaica, and the Arnold Arboretum have all been drawn upon for cultivated material, whilst other specimens have been obtained wild from their native countries. The frontispiece is a picture of the trunk of a gigantic example of the wonderful new Cypress found in the Island of Formosa (Cupressus formosensis) (see *Gard. Chron.*, fig. 54, March 2, 1912). This tree grows on Mount Morrison, and is 125 feet high, with a trunk girthing 67 feet. Truly one of the mammoths of the vegetable kingdom, worthy of association with the giants of California! Mr. Clinton-Baker gives illustrations of over thirty species of Juniperus, which will be extremely useful in this, one of the most difficult genera of the family. Ten species of Pinus, not included in previous volumes, are here portrayed. Nothing in the work gives a better idea of its value than the pictures of the three species of Athrotaxis. These Tasmanian trees are very much confused in gardens, but the photographs of sprays show with absolute clearness the distinctions between them. Such interesting genera as Torreya, Cephalotaxus, Actinostrobus, Fitzroya, Prumnopitys and Fokienia are also depicted. The work is of real scientific importance as well as of value to cultivators, and we trust it will meet with the success it deserves. *W. J. B.*

* *Illustrations of Conifers*, vol. iii. By H. Clinton-Baker, Hertford, 1913 (privately printed).
† See *Gardeners' Chronicle*, July 31, 1909, p. 68.



Fig. 183.—Lilium regale, showing its freedom of flowering in America.
See p. 416.

Gardening.*

No. 96 of Messrs. Jack's excellent series of People's Books is written by Mr. A. C. Bartlett, and treats of gardening. Most professional gardeners might be appalled by the task of treating of such a large subject in the brief space of less than 100 pages, but Mr. Bartlett, greatly daring, has attempted the task, and has achieved it remarkably well. Confronted with the problem of how to make the best use of his space, he has solved it by confining himself to the principles of gardening. In adopting this plan the author ran the grave risk of all those who deal in principles, that of leaving the reader as wise as before so far as practice is concerned. This risk Mr. Bartlett took and overcame, and, indeed, the highest praise which can be given to this little book is to say that the beginner will actually gain much useful knowledge by its perusal. As an example of the successful treatment of a difficult subject we may cite the pages devoted to the treatment of the soil. In a few dozen lines Mr. Bartlett succeeds in expounding the mysteries of trenching and bastard trenching, not only in a thoroughly sound manner, but in a way that the beginner can grasp at a single reading.

The advice given under the heading of seed and seed-sowing is good, and, indeed, this remark applies generally to the subjects treated of in this excellent little manual.

* *Gardening.* By A. Cecil Bartlett. (Messrs. T. C. & E. C. Jack.) "The People's Books." 6d. net.

The Ring of Nature.*

We gather from the publisher's announcement that Mr. Desmond's book is based on published weekly notes recording open-air observations during the space of a single year. After a perusal of this volume we feel a keen regret that

* *The Ring of Nature.* By G. C. Desmond. (Methuen.) 5s.

we had not the opportunity of following this acute observer and charming writer in his weekly pilgrimage among the beauties of nature. To write on natural history with the heavy hand of the professional man of science is easy; to discourse upon it with the licence of the sentimentalist, is — as would appear from the many books from this school — no less easy; but to combine accuracy with lightness of fancy and touch is to possess one of the rarest and most precious of gifts. That gift is Mr. Desmond's, and we commend the *Ring of Nature* unreservedly to all nature-lovers. Mr. Desmond's is the sure and delicate touch which persuades like a caress, not instructing as with the ferule of dogmatic statement. The triumph of his method may be seen on the rare occasions when his fancy betrays him and he is wrong with his facts. Even so we like him, and excuse his error of fact because of the charm of his imagining. For instance, Mr. Desmond suggests (p. 240), whilst recording the browning of the leaves in autumn, that it may be that we owe the beauty of the autumn leaf, no less than that of the red brown earth, to the presence of iron. "May it not be true that the blaze of autumn is caused by the rusting of millions and millions of fairy girders and stays in the scaffolding of the leaves from which all the vital green and their products have been withdrawn before the trees finally cast them away?" This in sober fact may not be, and for the simple reason that the green of the leaf contains no iron, although, curiously enough, that element is essential for the manufacture of the leaf-green. In thus commenting upon Mr. Desmond's book we let appear the pair of cloven hoofs, one of the man of science, the other of the reviewer. We apologise to the author for obtruding our deformity, and congratulate him sincerely upon the fidelity and art with which he has fashioned the *Ring of Nature*.

Illustrations of the Plants of Formosa.*

The first fascicle of Dr. Hayata's big work was published in 1911, and the third is to appear this year. The first deals with the families Ranunculaceæ to Rosaceæ, and the second comprises the Saxifragaceæ to the Dipsaceæ. In addition to the Conspectus, consisting of keys to the families, genera and species, the present fascicle includes some forty pages devoted to new or noteworthy plants of Formosa. Since the appearance of the first fascicle representatives of upwards of twenty additional genera have been added to the flora, and a list of these is given. Up to the present time the total number of species of vascular plants known from the island is 2,707, belonging to 858 genera and 157 families. All of Hayata's new species are here described, whether previously published elsewhere or not, and the repeated descriptions are rendered in English. Although the conspectus comprises only the families Saxifragaceæ to Dipsaceæ, in the Bentham and Hooker sequence, most of the plates illustrate plants belonging to families beyond this point, beginning with Viburnum (Caprifoliaceæ) and ending with Clerodendron (Verbenaceæ). They are almost exclusively Hayatan species, and all belong to previously-known genera and, with few exceptions, are small-flowered, as compared with species of the same genera from Western China. About fifteen species of Orchids are described as new. Aspidistra attenuata is a new species near A. elatior, from which it obviously differs in its much narrower leaves, up to five feet long. It also differs in having flower stalks about three inches in length. This species inhabits shady places at elevations of 6,000 to 7,000 feet. *W. B. H.*

* *Icones Plantarum Formosanarum nec non et Contributions ad Floram Formosanum*: or Icones of the Plants of Formosa and Materials for a Flora of the Island based on a Study of the Collections of the Botanical Survey of the Government of Formosa. By B. Hayata, Rigakuhakushi. Large 8vo. Fasciculus II., pp. 156, tt. 40. Published by the Bureau of Productive Industries, Taihoku, Formosa, 1912.

THE BULB GARDEN.

CALOCHORTI.

These exquisite flowers, generally known as Mariposa Lilies, have made immense strides in the public favour during the past few years, and it will be readily admitted by all who know them that few bulbous plants are capable of affording such a perfect picture of refined colouring and elegant contour as a bed of varieties of Calochortus venustus in vigorous health. The Calochorti are natives of Western North America and are spread over vast tracts of country, being met with so far north as British Columbia and so far south as Mexico, while their range extends inland from the Pacific Ocean to some distance east of the Rocky Mountains. In this immense region, an area comprising something like 2,000 square miles, the conditions of climate and soil are naturally variable. In some cases the plants grow in arid deserts, in others in moist meadows, while they are often found at an altitude of 9,000 feet above sea-level on the mountain spurs. The soils in which they flourish are as diverse as the localities which they affect. Some are found in sand or grit, others in loam, while others, again, are at home in the heaviest of clays, and one species has a predilection for salt meadows. Varied, however, as their tastes appear to be in their native country, the would-be cultivator in England must use none but a porous compost if anxious to succeed with Calochorti. Perfect drainage must also be provided, since stagnant moisture around the roots during the winter months, whilst growth is at a standstill, is fatal to the health of the plants. A raised and slightly sloping bed, against a south wall, composed of road-grit and leaf-mould added to a little sound loam, with a liberal addition of coarse silver sand appears to suit them well. The best season for planting is probably the month of October, but bulbs stored in sand have often been planted as late as February with good results. Since heavy rains are apt to unduly saturate the soil during the winter, precautions should be taken to prevent this occurrence by placing a spare light over the bed or surfacing it with reeds, which will lead off the surplus water. These temporary shelters should be removed towards the end of February or beginning of March. In planting, the bulbs should be covered with 2 inches of soil and be placed 3 inches apart. When the flower-stems wither a frame should be placed over the bed in order that the bulbs may become thoroughly ripened before their root-growth is again renewed, as in their native habitat the summers are excessively hot and dry. If preferred the bulbs may be lifted and placed on a dry shelf in sand in the greenhouse until the planting time returns, instead of covering the bed with a frame.

Calochorti are now classed in three sections—namely, Cyclobothra, Star Tulips and Mariposa Lilies, the last name being the Spanish for "butterfly." In the first section the most widely grown are Calochortus albus, pearly-white, fringed with silky hairs; C. amœnus, rich pink; and C. pulchellus, golden-yellow. Of section two, the Star Tulips, the following species are especially attractive:—C. Benthamii, bright canary-yellow; C. cœruleus, blue; C. apiculatus, straw-coloured; C. collinus, pale lilac; C. Maweanus, white; C. Tolmei, bluish-white; and C. Purdyi, pure white. Many of the above have the insides of the petals covered with long, silky hairs, sometimes white, but often coloured, which impart a unique and pleasing appearance to the expanded blossoms. Charming as are many of the representatives of the two foregoing sections, it is amongst the true Mariposa Lilies of section three that the loveliest of the Calochorti are to be found. Some of these plants are of vigorous growth, attaining a height of over 2 feet, while individual blossoms are often 4 inches across. The following form a handsome selection:—C. Kennedyi, orange-red; C. luteus, buttercup-yellow, blotched with brown at the base of the petals; C. nitidus, white, with indigo blotch in the centre of each petal; C. Plummeræ, soft lilac; C. splendens, mauve; and C. Weedii, orange-yellow. In this section are comprised C. venustus and its varieties, the flowers of which are of indescribable beauty. C. venustus oculatus has white petals with a black blotch margined with yellow in the centre of each, the exterior of the petals being purple-rose. C. v. citrinus is of a lemon-yellow tint with reddish-brown internal markings. C. v. purpurascens is of a soft lilac-mauve; and C. v. roseus is a very beautiful variety, having a rose-maroon blotch surrounded with yellow and then with pink in the upper portion of each petal. C. v. Vesta is the strongest-growing and perhaps the loveliest of all the Mariposa Lilies, and were one limited to a single form this should unhesitatingly be the variety grown. Its ivory-white petals are barred two-thirds of the way down, with a broad band of deep maroon margined with yellow, through which spots and flakes of the same hue show out. Closely allied to the Venustus sub-section is the Eldorado strain, of which C. v. pictus is of the most conspicuous beauty, the pure white petals each having a central blotch of yellow margined red, while the base of the petals is of a rich red-brown. *Wyndham Fitzherbert.*

PLANT COLLECTING IN CHINA.

We left Hankow (that is, "Han mouth," the city being situated at the confluence of the rivers, 600 miles up the Yangtze) on October 6 for a junk voyage of about 400 miles up the Han River; the voyage takes anything from three weeks to as many months, according to the season, and we were fortunate, perhaps, in accomplishing it in 24 days, on six of which we were unable to make any progress at all. The down trip takes a week or less.

As a rule, the magnificent autumn weather experienced in north China sets in before the middle of October, but this year there had been heavy and prolonged rains in late summer, nor were they over yet. Consequently, the current was swift, though the Han is here over a quarter of a mile in breadth, flowing through a flat agricultural country between mud banks, often 15 or 20 feet high. Only rarely as yet did we catch sight of a faint line of mountains on the horizon.

We walked on shore every day for the sake of exercise and a little shooting, while the trackers towed the junk; occasionally we sailed, but the river twists so that the wind never held for long in our favour.

There were vast stretches of Buckwheat, Millet, Cotton, and Hemp, the chief autumn crops over the whole of China. Villages hidden behind groves of Bamboo and shaded by a variety of trees, such as Sophora, Willow, Poplar and Indigofera, were scattered along the banks. In some of the villages were bushes of a purple-flowered Mallow, forming hedges 4 or 5 feet high, and Mulberry trees were also common, indicating a silk-industry here.

I was down for a week with high fever just after the start, but did not miss much, as three days' continuous rain kept us tied up, the bank being too slippery for tracking.

When I got about again I found a variety of common plants in flower along the bank; such genera as Potentilla, Capsella, Oxalis, Convolvulus, Nasturtium, Bidens, Taraxacum, Viola, Crepis, Daucus, Verbena, Stellaria, Melilotus and others, were represented by common English species and gave a very familiar look to the pastures.

Commonest of all were various Solanaceæ, Lycium with scarlet berries, Physalis Alkekengi, two species of Solanum; mostly shrubby species, with Capsicum ("red pepper") cultivated.

Some 200 miles from Hankow we met with the first sign of disaster, a breach in the right bank

fully 500 yards in length, and the country to the south-west inundated as far as the eye could reach, tree tops alone standing up out of the huge lake. Incalculable damage had, of course, been done, and hundreds of people had lost their lives in the catastrophe, and a still greater number rendered destitute. Such are the pitiful results of the reckless deforestation in the mountains—yet these floods are of almost annual occurrence in China.

Further up the river came sandy banks, caving in for miles and miles as the rushing water undercut them; in places we saw houses, already deserted, tottering on the brink, and trees about to be engulfed.

Here, too, the river had recently been over the banks, and in some places its flood could be traced to a distance of a mile from its present limits by the sand and mud everywhere plastered over fields scoured bare except for Polygonums, which were slowly straightening themselves again after having been knocked flat. It was a region of Polygonums, five or six species being noted; many of them had saved themselves from being swept away by forming roots at the nodes, and one species was characterised by developing air bladders of spongy tissue at the nodes, these floats, no doubt, enabling the plant to keep more or less erect in the water. A small Equisetum had also come through the ordeal pretty well, though lying prostrate now, and another common flood plant was a little Mazus with bluish flowers, looking very draggled indeed, though still holding up its head. Vast areas had been absolutely denuded of life, but in the sand were frequently to be seen lines of flotsam, indicating successive water-levels, and amongst this débris millions of seeds were germinating. It would have been interesting to note what was coming up, for amongst the wreckage I frequently observed the large globular fruits of the varnish tree, Aleurites, which must have been brought down from the mountains some distance away.

In some places, where grasses had been prostrated, the seeds were already germinating *in situ*, as though the plant were viviparous; this was very commonly the case with Millet. Many sandy tracts were covered with a tall tussocky grass, probably an Agrostis, which is used a good deal for thatching. This also had withstood the flood, and at the same time given protection to a few stragglers, though for the most part it covers the ground to the exclusion of all else.

A fierce gale kept us idle for another three days, and then the weather began to mend. We visited a neighbouring city, did a little shooting; but botanising in such cold, blustering weather was poor fun; yet there were still numerous plants in flower, including a pretty little Lysimachia and a shrubby Hibiscus with yellow flowers.

The river often broadened out to a width of half a mile, though it was now much shallower, with sandbanks and broad stretches of gravel, where alluvial gold-washing was in progress.

The people were busily ploughing their recently submerged land, and Wheat was coming up thinly, even in the river bed, for every available acre is utilised, and the corn would be reaped before the next summer rise of the river.

The riparian population includes a great number of fishermen, cormorants and a variety of hand-nets being employed.

Thrifty people! They were even digging down in the sand to a layer of vegetable flotsam stranded by past floods, which was being thrown into water holes or winnowed by the wind to separate the sand, and carried away to be utilised as manure or fuel!

As we approached the end of our journey the country changed. Bamboos disappeared from the villages and trees became more numerous, including Persimmons, Elms, and Gleditschia, with small orchards of Peaches. Cabbages, Turnips and Carrots are cultivated on a small scale, as well as Ricinus, Tobacco, Peanuts and Sweet Potatos (Ipomœa Batatas).

At Lao-ho-kow, the limit of our journey up the Han, reached on October 30, they had had 50 consecutive days' rain, and food was at famine prices.

Here were Musas growing, though they never flower; but Grapes and Strawberries, which have been planted by the missionaries, do well. I next saw the Han river at Hanchungfw, the head of navigation, another 800 miles higher up. It was February then, and we followed it almost to its source in the extreme south-west of Shensi. *F. Kingdon Hard.*

SOUTH AFRICA.

PERPETUAL-FLOWERING CARNATIONS IN THE TRANSVAAL.

We have received from Messrs. Allwood Bros. the following letter, which was sent to them by Mr. P. J. Barrow, of Pretoria:—

I have been growing the Carnation for some six years or more, and I consider it the best flower all round from every standpoint. Probably the reason why it is not grown more generally is because it needs a good deal of attention and must be propagated annually; but it is well worth the trouble. I have recently been converted to an appreciation of the Perpetual-Flowering section and am now discarding border varieties to a large extent, though the colours in these latter are so beautiful that I feel loth to part with them. Souvenir de la Malmaison varieties do not do well in the open, which is a great disappointment. About two years ago I brought from England a fine collection of all types, but the 'Malmaisons' did not thrive. I am afraid the climate is too warm for glasshouses; moreover, the hailstones here are as large as hazel-nuts and work havoc with the glass. A temperature of 80° to 100° in the shade during several months on end is something of a problem; but I find the plants do quite well in an open position, especially if shaded partially from the afternoon sun. Watering does not involve much labour, as we get abundant rains in the summer—sometimes rather too much for flat beds. Attacks of rust are, unfortunately, frequent in the summer, owing to the warm, damp atmosphere; but a few dry days between the wet ones are of benefit, and the plants, except for a slight disfigurement, do not seem to be permanently harmed by the rust. I am trying lime and sulphur as a remedy in a few cases, but it is expensive and its application takes up a great deal of time. I find it better to pull out the worst plants and leave the rest alone. The "spot" is rarely seen—in the summer the plant grows too vigorously to be susceptible to it and in the winter we get barely a drop of rain. During the five or six months of cool, bracing weather which represent our winter the flowers look splendid. The ground out-of-doors is carefully watered once a month; the earth is scraped away from the base of the plant and as much water given as the ground will absorb, after which the loose soil is replaced. Those growing on benches in the open are watered as required, usually about every three or four days, as they dry very quickly. We are nearly 5,000 feet above sea level and get fairly severe frosts in the middle of winter. I have known nearly 20°; but it does not seem to affect the plants—they will even flower through it. The sun-temperature in the day approaches 70° or 80°, which speaks well for the hardiness of the Carnation. The worst pests are soil insects, for which reason I am gradually coming to grow all the plants on benches in the open ground, well off the soil-level. I make the benches of wood, with movable bottoms, so that they can be thoroughly cleaned, and I allow for six or seven inches of soil. No drainage material is necessary, as I work the lumps of fibrous earth to the bottom. With reference to sowing, I put in some seed at the end of October last and have already cut seven blooms from different plants, besides throwing out half a dozen more which seemed of no value. Many more are now coming into bloom and look promising. One white flower bids fair to turn out a perfect gem; it has a delightful perfume. As regards propagation I have tried both layering and cuttings. Layering is, of course, the surest method, but it is rather slow, and I cannot well afford to grow spare plants specially for this purpose. I strike the cuttings in the open, shaded from the sun and protected from the wind. Autumn seems the best time, and I always grow them in sand. I get about 70 or 80 per cent. results—some varieties do not seem to strike well, and these I note for future layering. During the winter I shall try to strike some in propagating boxes, from which I can exclude frost. We rarely get any frost except that which is caused by the condensation of the water in the atmosphere on the foliage, and a hair net placed over the plants often prevents it. Next winter I am going to erect a framework large enough to accommodate about a thousand plants, over which thin canvas covers will be unrolled at night; by this means I hope to produce fine blooms all through the winter. I have lately obtained some new varieties from Durban, but they were not at all good specimens—I am propagating far better ones myself. If I had the necessary capital I should erect glass permanent covers without sides. Apropos of wealth, I often look around me with amazement at the spectacle of millionaires in this country who are content to live on pieces of land just large enough to hold their houses. I can imagine how beautiful the country could be made if these people were keener on gardening and all that it means."

TREES AND SHRUBS.

SMALL-LEAVED RHODODENDRONS.

The great diversity of size, form and habit in the genus Rhododendron is most marked in the Himalayan species, but it is also strikingly evident in the Chinese species that are now in cultivation. Among those gardeners who have a weakness for the big, showy species there is a disposition to discredit the small ones although they include some of proved horticultural merit. They may not look like Rhododendrons, but they none the less have charms that are certain to appeal to gardeners of taste. For example, R. racemosum, now that it has proved its worth, has become very popular, and R. intricatum, the pigmy species with blue flowers, is in demand for rock gardens because of its prettiness and hardiness. Another Chinese species that has come to stay is R. primulinum, which forms a myrtle-like bush 2 feet or so high and has primrose-yellow flowers after the style of Azalea amœna. There are probably a dozen more at least of the Chinese Rhododendrons with these characters, including R. cephalanthum, R. fastigiatum, R. flavidum, R. capitatum, R. thymifolium and R. nigro-punctatum. They are all compact-growing shrubs, with short, twiggy branches, small leaves, and small flowers, these being the characters of the section Osmothamnus, the best-known example of which is the Himalayan R. anthopogon (fragrans). Thanks to Messrs. Wilson, Forrest, Purdom and other collectors we have now growing a large number—at least a hundred—of the Chinese Rhododendrons either at the Kew or Edinburgh Botanic Gardens, the Coombe Wood nursery of Messrs. James Veitch and Sons, or in the garden of Mr. P. D. Williams, Lanarth, Cornwall. We have lately received from Mr. Williams a branch in flower of R. rufescens which, according to Messrs. Wilson and Forrest, forms a bush 3 to 4 feet high on the "dry ledges and clefts of limestone cliffs on the eastern flank of the Lichiang range," at an altitude that indicates absolute hardiness in this country. The plant was at first mistaken for R. anthopogon, which gives an idea of it, the leaves being ovate, about half-an-inch long, and the yellow flowers not unlike those of the common Jasmine. It is Wilson's No. 1,888. The species was [illegible]

The Week's Work.

PLANTS UNDER GLASS.

By F. JENNINGS, Gardener to the DUKE OF DEVONSHIRE, Chatsworth, Derbyshire.

CAMPANULA CALYCANTHEMA.—If not sown already, insert seeds of Canterbury Bells (Campanula calycanthema), to furnish plants for flowering in pots next spring. The seeds may be sown either in pots or boxes filled with porous, finely-sifted soil. Cover the seeds lightly, water them and place the pots or boxes in a cold frame situated for preference in a shaded place. When the seedlings are large enough to handle transplant them in a warm border and keep the roots well watered. The plants should be lifted before cold weather sets in and placed in a cold frame or glass house. The seeds may, if preferred, be sown in the open border and the seedlings transplanted.

MYOSOTIS ROYAL BLUE.—Seeds of this Forget-me-Not should be sown either in an open border or in boxes to supply plants for pot culture. Afford the plants a similar treatment to that advised for Canterbury Bells. When the plants are large enough they should be potted. After they are re-established stand the pots on a shelf in a cold vinery and ventilate freely to prevent damping.

CINERARIA AND CALCEOLARIA.— The main batches of Cineraria and Calceolaria should be sown now. As many of the colours of Cinerarias are not popular, it is advisable to obtain seeds of such colours as are required, including some of the stellata varieties. Slugs may cause much harm both to Cinerarias and Calceolarias unless measures are taken to combat them. Drought at the roots must be avoided.

POLYANTHUS.—As most of the varieties of Polyanthus may be obtained true from seed it is advisable to sow seeds of the colours required in preference to mixed varieties. Make the sowing in pots or boxes filled with a mixture of loam, leaf-mould and sand that has been passed through a fine sieve. First soak the soil with water, then sow the seed, and stand the seed-pans in a cold frame on an ash bottom. Cover the pots with glass, and the glass with paper. When the seedlings appear remove the glass, but continue to provide shade during times of bright sunshine. Harden the seedlings gradually, eventually removing the lights entirely late in the afternoon, and not re-placing them until the next morning.

EXACUM AFFINE.—Make a sowing of this pleasing and easily cultivated plant. Sow in pots or pans filled with fine soil, and cover the seeds lightly. Place the pans on a shelf in a warm house and cover them with a sheet of glass and shade with paper. The seedlings should be hardened gradually, and when large enough to handle, transplanted, three in a small 60-size pot. They grow best in fine, sandy soil mixed with a little fine peat. Pots 4 or 4½ inches in diameter are large enough for the final potting, and the soil should consist of a mixture of loam, leaf-mould, peat, coarse sand and a little dried cow-manure. Grow the plants in a warm house and flower them in a stove temperature.

SALVIA SPLENDENS GRANDIFLORA. — Plants of this beautiful Sage are ready for their final potting; they grow best in a mixture of rich loam, a little leaf-mould, coarse sand or mortar rubble, decayed cow manure, and a 9-inch pot-ful of soot and bone meal. When the potting is finished soak the roots with water and stand the plants out-of-doors on an ash bottom. The pots will become filled with roots and there will be a danger, unless they are afforded a regular and sufficient supply of moisture, of a check from drought. Clear waterings may be supplemented by manure water or some other form of liquid stimulant. The plants should be stopped, and if this work is done in batches the period of flowering will be prolonged. Cuttings inserted at this date will make fine plants for blooming in 4½ and 6 inch pots next autumn.

GENERAL WORK.—Pot plants of Begonia Gloire de Lorraine as those of each batch are ready for a shift: specimens intended for use as edging plants may be flowered in 3-inch pots. The earliest plants should be staked carefully and grown as previously advised, fumigating the house occasionally to destroy thrips. The plants will be greatly benefited by syringing them late in the afternoons, say, two or three times each week, with gas-water obtained from the tar-tank at a gas-house. It should be used at the strength of a small 60 potful to 3 gallons of water. Well syringe the plants overhead and under the foliage, as this adds greatly to the colour and vigour of the leaves and helps to prevent attacks of insect pests. This Begonia thrives much better in an old house with a good solid bed and plenty of shade in a close temperature of 70° to 75° with plenty of moisture than in light modern houses, and is less liable to injury by thrips. The plants should be flowered in a light, dry glass-house where the flowers will last longer than under the other conditions described. Plants of Smilax are ready for setting in borders at the foot of back walls of vineries, etc. An early batch of Stocks for flowering in pots in the early autumn should be raised from seeds sown now. Chrysanthemums of the large show and bush varieties are ready for their final potting. It is advisable to have the soil prepared in advance, mixing enough to pot the whole batch, as this will save labour.

THE FLOWER GARDEN.

By EDWARD HARRISS, Gardener to Lady WANTAGE, Lockinge, Berkshire.

STANDARD PLANTS.—It is necessary to train fresh standards of the various plants employed for this system of training to replace worn-out specimens. Many subjects are suitable for the purpose, and the plants are useful for providing changes in the general scheme of bedding each season, not only in flower-beds but also in the mixed border. Standard Heliotropes may be grown easily and they last for a number of years. Cuttings rooted in the spring and grown in a fairly warm, moist atmosphere will soon reach a height suitable for standards, when the leading shoots should be stopped. Rub out all growths up to within 9 inches of the top of the plant, leaving the remainder to form the "head." The growths that remain should also be stopped when they are about 5 or 6 inches long to make the "head" grow bushy. At that stage the plants may be removed out-of-doors and plunged in ashes to become hardened. If afforded the treatment I advise they will make splendid plants for bedding out next season. Brugmansia (Datura) suaveolens is a very imposing plant when grown in standard form, although it requires a considerable time to train. The species may be propagated easily from cuttings inserted in the spring, and if the rooted cuttings are kept growing steadily in a moderately warm house they will soon reach a suitable height. Lantanas should always be included in the collection of standard plants; they may be grown very easily, and their flowers offer several very beautiful and distinct colours, enabling them to be used with various other subjects. Veronica Andersonii is another useful plant for growing in this way. It is very effective planted above a bed of scarlet Pelargoniums or Salvia splendens Glory of Zurich. Streptosolen Jamesonii is a greenhouse, evergreen shrub, with flowers of a bright orange colour, and when associated with other colours of suitable shades for blending, it makes a very effective bed. A stock may be raised easily from cuttings or seeds sown in the spring. The plants should be placed out-of-doors in the autumn to become hardened. Plumbago capensis may be grown either as standards or as tall specimens for use as dot plants, the latter being perhaps the better system of growing it.

SPECIMEN PLANTS.—The flowering of specimen plants may be regulated according to the time they are required to bloom. If they are not wanted in bloom until late in the summer the flowers should be pinched off, and in some cases the young growths stopped. Old, established specimens require plenty of water and stimulants. If the pots in which they are growing have not already been top-dressed this should be done at once, as the roots will derive great benefit from the extra food towards the end of the summer. Specimen plants in pots of such kinds as Pelargoniums, Fuchsias, Plumbago capensis and Streptosolen Jamesonii plunged in the ground require watering thoroughly each day during hot weather. Some of those I have enumerated are very useful for plunging in grass in suitable situations. A few new tubs should be furnished with plants every year to replace old ones. Ivy-leaved Pelargoniums Mme. Crousse and Souvenir de Charles Turner are especially suited for growing in tubs, as also are some of the scented-leaf varieties. Tubs made up at the present time will be in fine condition next season. The soil for the potting should be rich and made quite firm.

THE KITCHEN GARDEN.

By JOHN DUNN, Foreman, Royal Gardens, Windsor.

HERBS.—All herbs raised from seed sown in the spring should be transplanted as soon as they are large enough for removing. Basil requires a rich soil and a sheltered position, and may be planted at distances of 1 foot apart each way. Marjoram may be treated in the same manner until September, when the plants should be lifted carefully and potted. This herb requires a temperature of 50° in winter with sufficient air to prevent damping.

ASPARAGUS.—The time to discontinue the cutting of Asparagus depends to a great extent on the locality, whether it is late or early. A period of five weeks is quite long enough to cut from the same beds wherever they are situated. If a prolonged supply is desired plantations should be made in different parts of the garden, with beds for the earliest supply in the warmest situation, while those for late cropping should occupy the cooler portions of the garden. Plants which are intended for forcing should receive every encouragement to mature their growth. Stir the surface soil and give frequent light dressings of salt or artificial manure during showery weather; in times of dry weather water the beds on frequent occasions with liquid manure from the farmyard. It is advisable to afford a support to the stems against damage by rough winds either by staking the plants singly or tying the shoots to wires, which should be extended along the rows at about 2 feet from the ground. For this purpose strong sticks should be driven into the ground in sufficient numbers to keep the wire in position. Young plantations should be kept free from weeds and the shoots secured by tying as soon as possible. Seedling plants in rows should be thinned to 6 inches apart in the rows so that they may have room to develop.

ENDIVE.—Endive furnishes valuable salading during the autumn and winter, and should be sown in shallow drills drawn at 1 foot apart. When the plants are large enough to handle they should be thinned freely. Afford liberal supplies of water to plants intended for furnishing a successional crop in dry weather, or the early ones will be almost sure to "bolt." The varieties Green Curled and Batavian may be sown now, but the main sowing for winter supplies need not be made before the middle of July.

LETTUCE.—Frequent sowings of Lettuce seed should be made from now until the end of July on a north border or one facing east. If the soil is of a heavy nature it will be an advantage. Mammoth White Cos, Iceberg and All-the-year-round are good varieties for summer use. Water the plants in dry weather, thoroughly soaking the soil; the practice of affording a mere sprinkling of water daily cannot be too strongly condemned.

FRENCH BEANS.—Make successional sowings of French Beans from now until the end of July. Any quarter of the garden is suitable provided the soil is in a good condition. A space of 2 feet should be allowed between the rows. When the young plants are a few inches high mulch the ground between the rows with manure from the farmyard and afterwards apply a good watering.

Runner Beans.—It is not too late to make further sowings of Scarlet Runner Beans. The earlier plants should be staked before they grow too tall, after which a good mulching of manure should be applied. The plants should receive liberal supplies of water during hot, dry weather, for if the roots are once allowed to suffer from drought the crop will suffer.

Tomatos.—Tomatos planted out-of-doors are making rapid growth and should receive every encouragement to set their fruits. Do not allow them to become stunted for want of water at the roots. All suckers and side-shoots should be removed as soon as they develop.

General Work.—Let the hoe be constantly at work amongst the growing crops for the purpose of killing small weeds and keeping the soil in a sweet, healthy condition. Hoeing the soil is very necessary after heavy rains, and also during dry weather, as it keeps the ground from cracking. Continue to plant autumn Cauliflowers and Broccoli as further ground becomes vacant, watering the plants thoroughly to settle the soil about their roots.

THE HARDY FRUIT GARDEN.

By B. Goodacre, Gardener to Sir Ernest Cassel. Moulton Paddocks, Newmarket.

Disbudding and Training Wall Trees.—The work of thinning, pinching, tying and training of fruit trees on walls demands constant attention, for much harm may follow if it is neglected, more especially in the case of younger trees, the growths of which need to be thinned freely. Neglect in thinning will cause the sap to flow to the stronger part of the tree, and the balance of growth will be upset. Aim at distributing the growth so that the sap will flow equally to all parts. Where growth is weakly an extra number of shoots should be retained. Remove first all growths that are badly situated for forming spurs, more especially those having a tendency to grow in an inward direction towards the wall. The other shoots should be thinned, leaving only sufficient to furnish the branches with fruiting spurs. Stone fruits which fruit in clusters, such as the Plum and Cherry, should have spurs at, say, 2½ to 3 inches apart, but those of the Pear require a distance of 4 to 5 inches. Older trees with branches showing signs of decay should be refurnished with young shoots from the base. Choose a well-placed shoot on the upper side of the branch and allow it to grow for some time yet, but take care to train it in position whilst there is still no danger of breaking it, for the wood becomes brittle later. All other shoots may be pinched where possible, using only the finger and thumb. This stopping of the new shoots has the advantages of allowing the sun and air to reach the fruits at an early stage, and removes hiding-places for insect pests, besides conserving the energies of the tree. The shoots should be pinched in all cases to from 2 to 3 inches; those of the Pear may be left a little longer than the shoots of stone fruits. In the case of Peaches and Nectarines it is a good plan to tie the stronger shoots first. This will have a tendency to retard the flow of sap and will therefore benefit the weaker growths. On these successional shoots depends largely next year's crop, and they should therefore receive every attention. Encourage in every possible way the growth of shoots at the bottom of the tree. Let them have plenty of sunlight, and those that are inclined to be weakly may be trained more upward than usual. If the tree is in a strong, healthy condition, shoots not required for leaders may be pinched back when about 4 inches long, but if the tree is weakly they should not be stopped until the stoning of the fruits is completed. Where nails are used for securing the trees to the walls, see that they do not cause damage to the young fruits, and let the shreds be placed loosely around the branches. It is often necessary to remove nails where they interfere with the development of the fruit.

Protecting Strawberries from Birds.—Strawberry beds should have nets placed over them as soon as the fruits show signs of colouring, as the earliest berries are usually the finest. A good plan is to drive strong stakes in the ground around the bed at regular distances and stretch 4-feet-wide wire netting over them. This method requires less netting, makes the crop more secure from rats and birds and enables picking to be accomplished more easily, as it does not necessitate the entire removal of the net, as is the case when the latter is placed either on the ground or within a few feet of it.

THE ORCHID HOUSES.

By W. H. White, Grower to Sir Trevor Lawrence, Bart., Burford, Dorking.

East Indian House. — Certain of the warmer-growing Cypripediums as C. Lawrenceanum, C. Rothschildianum, C. Stonei, C. Curtisii, C. superbiens, C. superciliare, C. Rossettii, C. Morganiæ, C. Olivia, C. Thompsonianum, C. Maudiæ, C. Thalia and C. Youngianum will need immediate attention if increased root-space is necessary or division of the root stock. Although they are not in general favour now, several species of the Selenipedium section are well worth cultivating for their very delicate and pretty flowers, especially such plants as C. Sedenii and its variety candidulum; C. Schroderæ, C. leucorrhoda, C. Dominianum and C. Schimii, whilst others, such as C. grande, C. grande atratum, C. nitidissimum and C. macrochilum are not only interesting, but the tall spikes of bloom are useful for decorative purposes when cut. Pot-bound plants should be shifted into receptacles about two sizes larger, and as nearly all of the Cypripediums mentioned are free growers they should be potted in an open compost consisting of good fibrous loam, Osmunda-fibre cut up small, and Sphagnum-moss in equal proportions, with a moderate quantity of small crocks. Only a very moderate amount of water should be afforded to plants that have been repotted, but as soon as the roots become active again and new growths push up the quantity of water should be increased gradually. Grow the plants close to the roof-glass, but shade them carefully from strong sunshine.

Lycaste.—Such Lycastes as L. Balliæ, L. plana Measuresiana, L. gigantea, L. Smeeana, L. fulvescens, L. lanipes, L. costata, together with L. Skinneri and its numerous varieties, including the still rare L. S. alba, are useful and beautiful Orchids. Some, including L. macrobulbon, L. aromatica, L. Deppei, L. cruenta, L. candida, L. Lawrenceana, L. Schilleriana, L. Youngii, L. lasioglossa, L. tricolor, have smaller flowers, but they are very pretty plants. L. Dyeriana is the most distinct species; it is similar in habit to Cattleya citrina, while the drooping flowers are of the same pale green shade as the leaves. Owing to its peculiar mode of growth this Orchid should be grown suspended in a pan or shallow basket. As many of these Lycastes have finished blooming and are starting to grow again, they should be examined as to their need for repotting, etc. They grow freely in a mixture of equal parts fibrous loam, leaf-mould, Osmunda-fibre and Sphagnum-moss, with a moderate quantity of small crocks added to keep the soil porous. The addition of the crocks is very important, as, when growing freely, Lycastes require much moisture, but a stagnant compost soon causes the roots to decay and the young growths to turn sickly. The young growths soon rot off if the plants are placed too low in the soil, but if the base of the pseudo-bulbs is placed on a level with the rim of the pot, they will, if the watering be done carefully, take no harm. After the plants are repotted they should be watered with great care, as an overdose may cause the young growths to decay and set up disease in the pseudo-bulbs. The plants grow wild in fairly high altitudes and they grow best during the summer months in a light position in the Odontoglossum house, but towards the autumn when the nights become colder, the intermediate house is more suitable for them. Even in a cool house some of these Lycastes are often attacked by a small species of red spider, therefore periodical sponging of the leaves is advisable.

Anguloa.—The various species and varieties of Anguloa that have passed their flowering season, and have the new growths well advanced, may be repotted if they require fresh compost or increased room. Use materials similar to those advised for Lycastes, and grow the plants in a light position in the intermediate house. When new roots are plentiful afford a copious supply of water until the pseudo-bulbs are mature. The large leaves of these plants should also be sponged frequently to destroy red spider and scale insects.

FRUITS UNDER GLASS.

By James Whytock, Gardener to the Duke of Buccleuch, Dalkeith Palace, Midlothian.

The Orchard House.—The season in Scotland, so far, has not been very favourable for Peaches, Nectarines, and other stone fruits growing in unheated houses, for the weather, with the exception of a very few hot days recently, has been sunless by day and cold at night. It is necessary to ventilate the house freely during the daytime, but when cold winds prevail the front ventilators should be closed to prevent draughts, admitting air through the top apertures only. Syringe the trees twice at intervals on bright days and damp the bare surfaces in the house three or four times daily. Spray the trees in the evening with the X.L. All preparation to destroy insect pests, and wash the foliage with clear water by means of the syringe the following morning. Attend to the training and tying of the young shoots, avoiding overcrowding of the branches. Train in some of the best placed shoots, and the central part especially should be furnished with the young, fruiting wood. All other strong growths should be stopped by pinching. The final thinning of the fruits should be delayed until they have passed the stoning age; the number to leave for a crop must be determined by the strength of the individual tree. Young, vigorous plants may be allowed to mature heavy crops, whilst older specimens that are making but little new growth should only be permitted to carry a moderate number. At that stage it will be necessary to determine whether the border requires watering. Young, strong-growing trees of Peach and Plum should not be manured, but older plants that are bearing large crops may be assisted with a little artificial manure sprinkled over the border. After the fruits have completed their stoning liquid manure may be afforded the roots, provided the condition of the border is such that moisture may be applied with benefit.

Melons.—When the earliest plants have finished their crop the soil and the old plants should be removed. Fresh compost should be provided for the next crop, and it may consist of a mixture of fibrous loam, lime rubble and concentrated manure. Melons grow best in heavy, adhesive soil, and the materials should be brought into the house two days previous to planting in order to become warmed. The best plants are those which have not been allowed to become pot-bound, and they may be planted when quite small. Set them at a distance of 2 feet apart, and train each to a single stem. If the soil is fairly moist the roots will not require watering until the plants have started to grow, but the foliage should be syringed lightly on bright afternoons at the time of closing the house. As the plants come into bearing, and at all stages of fruiting, the house should be ventilated freely on bright days, keeping both the atmosphere and the border on the dry side. But excessive dryness at the roots must be guarded against, as healthy foliage is essential to produce Melons of first quality. Plants that are swelling their fruits and carrying good crops should be liberally supplied with weak liquid manure, closing the houses in the afternoons of bright days with considerable sun heat, and damping all surfaces to create a moist atmosphere. Melons may be grown during the summer in shallow pits in which a little artificial heat may be obtained from hot-water pipes. Place a layer of stable litter and leaves, about 18 inches deep, in the bottom of the pit, and on this form a ridge of soil as advised in the case of the Melons. The Cantaloupe is a good type of Melon for this system of culture, but any hardy variety may be used. Make the most of the sun heat, closing the pit early in the afternoon, and syringe the plants at the same time. When sufficient fruits have set, top-dress the soil and attend carefully to the watering. Do not allow the water to wet the collar of any plant. Attend constantly to the pinching of the [illegible] stopping the growth to one or two joints beyond the fruit.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the **PUBLISHER**, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher. — *Our Correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the* PUBLISHER; *and that all communications intended for publication, or referring to the Literary department, and all plants to be named, should be directed to the* EDITORS. *The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.*

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS, 41, Wellington Street, Covent Garden, London.** *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

Special Notice to Correspondents. — *The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

Illustrations.—*The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.*

Local News.—*Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.*

APPOINTMENTS FOR THE ENSUING WEEK.

WEDNESDAY, JUNE 25—
Colchester Rose Sh. Norfolk and Norwich Rose Sh. (2 days). Southampton Roy. Hort. Rose and Sweet Pea Sh. Croydon Fl. Sh. Mallow (Co. Cork) Sh. (2 days).

THURSDAY, JUNE 26—
Canterbury and Kent Rose Sh.

SATURDAY, JUNE 28—
Windsor, Eton and Dist. Rose Sh. Reigate Rose and Sweet Pea Sh.

MONDAY, JUNE 30—
Newry (Co. Down) Sh.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich—61.

ACTUAL TEMPERATURES :—
LONDON.—*Wednesday, June* 18 (6 p.m.). Max. 76°, Min. 53°.
Gardeners' Chronicle Office, 41, Wellington Street. Covent Garden, London, *Thursday, June* 19 (10 a.m.); Bar. 29.6. Temp. 68.
Weather—Overcast.
PROVINCES.—*Wednesday, June* 18, Max. 76°, Spalding. England, S.E.; Min. 55°, Barrow.

Blue Hortensias.

If we may judge from the number of enquiries which we receive on the subject, the production of blue flowers in rose-pink races of Hortensia (Hydrangea hortensis) exercises a peculiar fascination on the minds of gardeners. Scientifically also the subject is one of great interest, albeit that our knowledge of the cause of the production of the blue colour is slender in the extreme. On the practical side also not much more certainty exists. For though it is generally known that by watering plants with solutions of iron salts, such, for example, as iron alum, the pink races may be induced to bear blue flowers, many people who have tried the experiment have done so without success. The most they have achieved perhaps is the production of a drab violet, which is far from satisfying their hopeful expectation.

It may be useful, therefore, to set down such facts as we know, some from our own experience and some from the experience of others, on the means to be employed for the conversion of pink into blue shades.

In the first place we may lay down the proposition that any treatment to be effective must be begun long before the flowering period; for the change of colour is the result of no mere chemical action, such, for example, as that which occurs when red litmus paper, dipped into an alkaline solution, turns blue. It is probable that—for the change of colour to occur—the cellular rudiments of the flower must be bathed in and hence be able to absorb traces of iron salts. Therefore, the gardener who yearns for blue Hortensias must set about the work of obtaining them at least a year in advance.

In the second place, if the soil be chalky or rich in lime no mere watering with iron salts will suffice, and the gardener must proceed first to make up a suitable compost and to see that the roots of the plant are confined to that compost. For, as is pointed out by Mr. Henri Bliss in *Le Petit Jardin* (May 10, 1913), Hortensias are always rosy on calcareous soil, whereas they became blue readily and naturally when grown in non-calcareous soils derived from the older formations.

The author just cited recommends the following compost: peat to which is added 2-5ths leaf mould and 1-5th sand. To this should be added 10 per cent. of powdered slates, 3 per cent. sulphate of iron—we ourselves are inclined to recommend a rather larger quantity of iron alum—and 10 per cent. of ammonium sulphate. As stated already, the plants must be prepared and planted properly a year in advance. They should be removed from ordinary soil, their roots well washed and planted in pots or beds of the compost. If pots are used they must be plunged in the compost so that any roots which grow out from the bottom or top are confined to the compost, and do not find their way into ordinary soil. If they do dirty violet-coloured flowers may be produced. Mr. Bliss insists that for the best results the compost should be very rich in humus and organic matter, well supplied with nitrogen and phosphoric acid and poor in lime and potash. If the compost be of the kind which has been described these conditions will be well on the way to fulfilment. When watering is necessary, rain water should be given—of course hard water, rich in lime, will not do—and manure water should be supplied liberally. The plants should be watered twice a week during their growing period with water containing about $\frac{1}{4}$ oz. of sulphate of iron to the gallon. A few old nails or a handful of iron filings may be added with advantage to the compost, though, as need scarcely be pointed out, these sources of iron are useless by themselves. Any gardener who realises the conditions necessary for this magic will be able to devise for himself yet simpler measures whereby it may be wrought.

Yellowing due to Excess of Lime.

The fact that various plants take on a yellow colour in certain soils is well known, and has long been attributed to lack of iron in the soil. This view, however, was difficult of general acceptance, since the yellowing or chlorosis may manifest itself in plants grown in soils which do not lack iron salts. On the one hand was this fact, and on the other the evidence from experiment that the injection of sulphate of iron into the trunk or branches of a chlorotic tree may bring about the natural greenness of its foliage.

The apparent contradiction between these facts has led to the conclusion that chlorosis may be due to different causes, and that of these causes lack of iron is but one. Mr. M. L. Godde* maintains, however, that lack of iron is the real cause of yellowing, not only in the case of plants growing on soil poor in iron, but also in the case of calcareous chlorosis. His argument is that in soils containing an excess of lime the iron salts which may be present in the soil do not occur in a form in which they may be taken up by the roots. Mr. Godde holds that to be absorbed the salts of iron must occur as double salts—e.g., as salts of iron and potash. Hence he recommends as a remedy for chlorosis watering the soil not with sulphate of iron, of which substance the roots of most plants are not tolerant, but with a double salt of iron and potash.

This salt he prepares as follows:—5 oz. of sulphate of potash (the bi-sulphate of commerce) is dissolved in a little more than half a pint of rain water, and to the solution are added $\frac{1}{2}$ oz. of iron filings and a very small quantity—about a dram = $\frac{1}{16}$ oz.—of red copper filings. The mixture is warmed slightly and a drop or two of nitric acid may be added. As a result the iron and copper become dissolved. When this has happened the liquid is poured off into another vessel, and whilst it is stirred continuously ammonia is added, a little at a time, till the green liquid begins to turn yellow. The liquid after the addition of the ammonia should still be slightly acid. If, however, the ground be very calcareous ammonia need not be added to the solution. The volume of the liquid is made up to $1\frac{3}{4}$ pint by the addition of water, and the solution, used at the rate of $\frac{1}{3}$ oz. to 2 pints of water, is watered over the ground in which the chlorotic plants are growing. A simpler method, but giving slower results, is to water the ground with bi-sulphate of potash at the rate of $\frac{1}{16}$ oz. to 2 pints of water. It is best to dissolve the salt in advance and, as in the previous method, to add ammonia to about one-third of the solution, to mix all together, and to use at the rate indicated above. A few iron filings should be placed round the plant if iron is lacking from the soil. Mr. Godde states that with some plants—vines, for example—one or two waterings suffice. Chrysanthemums, if they have not reached the bud stage, may be watered with sulphate of iron, which brings about

* *Journal de la Soc. Nat. d'Horticulture de France* May, 1913.



EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street Covent Garden, W.C.

Editors and Publisher. — *Our Correspondents could obviate delay in obtaining answers to their communications, and save us much time and correspondence, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the* PUBLISHER; *and that all communications intended for publication, or relating to the Literary department, and all specimens to be named, should be directed to the* EDITORS. *The two departments, Publishing and Literary, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.*

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* EDITORS, 41, Wellington Street, Covent Garden, London. *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

Notice to Correspondents. — *The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations, unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

Illustrations.—*The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, but cannot undertake to return them unless specially requested to do so.*

Local News.—*Correspondents will greatly oblige by sending to the Editors early intelligence of local matters likely to be of interest to our readers, or of any matter which it is desirable to bring under the notice of horticulturists.*

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, JUNE 25—

Colchester Rose Sh. Norfolk and Norwich Rose Sh. (2 days). Southampton Roy. Hort. Rose and Sweet Pea Sh. Croydon Fl. Sh. Mallow (Co. Cork) Sh. (2 days).

[illegible]

[illegible]

[illegible]



NYMPHÆA GIGANTEA VAR. HUDSONIANA

Flowers 9 inches in diameter.

the recovery of the green colour very rapidly; but the use of this salt has the inconvenience that it causes the flower-heads to rot, and hence it is best to use the double sulphate of iron and potash prepared in the way described above.

Coloured Supplement.—Our supplement this week illustrates a variety of Nymphæa gigantea which was raised in the gardens of Mr. Leopold de Rothschild at Gunnersbury House, Acton, some few years ago by Mr. James Hudson. Mr. Hudson has found the cultivation of blue Nymphæas out-of-doors comparatively easy. N. stellata Berlin var. and N. pulcherrima can be grown in the open garden, provided the water be warmed to 70° or 75° at the commencement of growth in the spring. No artificial heating is necessary in hot weather, but in periods of dull and sunless weather a slight warmth is necessary. N. pulcherrima is more vigorous than N. stellata. Both species remain safe through the winter in an open tank, provided the temperature does not fall below 55°. N. gigantea var. Hudsoniana, which we illustrate, requires slightly more warmth than the other two, say 5° more. It is sometimes difficult to start into growth in the spring, the young tubers making a few leaves and then failing to flower. But when in flower the variety Hudsoniana is the finest blue Nymphæa in cultivation, a first-class flower measuring 9 inches in diameter.

LECTURES AT SOUTH KENSINGTON.—The attendance at the Museum Lectures of the British Museum and at South Kensington, and the interest attaching to those at Kew, are evidence of the value of this means of popularising science. Throughout the winter the Natural History Museum Lectures have attracted audiences often beyond the possibility of the members hearing the lecturer; but there is this advantage of the Museum Lecture, that the constant change of position gives everyone a chance of hearing something. Kew is just now at the zenith of its beauty. In early June it is possible to see together the last of the Rhododendrons and the first of the Roses. But the beauties of Kew touch a deeper chord when one has explanations coming from a practised botanist, who has known these unrivalled gardens since his boyhood. It is something for the passing visitor to learn the age and history of the oldest trees here, now in the full grandeur of their early spring foliage; to have the curiosities of the Palm House explained, and to have brought to notice a hidden flower sitting on the stem of a tree, and looking for all the world like a Sea Anemone taking its repose in air instead of water. One returns again to the fresh spring air to be shown Eucomia ulmoides, the only rubber-producing tree of temperate climates, and a Poplar tree that has grown 90 feet in twenty-five years: Populus Eugenii. Admitting that it is a good thing to popularise science, these Lectures undoubtedly fill a gap. They come between, on the one hand, the ordinary science lecture with its tendency to dullness, the constraint of sitting in one position, the often vitiated atmosphere; and, on the other hand, the dumb show of Museum specimens. In the Museum Lectures one moves about freely, asks questions, and receives explanations. The attention, intead of being strained, is constantly renewed. One may hope that Museum Lectures will be extended. It may be doubted whether the policy adopted at Kew of charging for the lectures is worth the trouble it entails, or whether if a charge be made it should be the comparatively high one of half a crown.

SWISS HORTICULTURAL EXHIBITION.—A horticultural exhibition will be held in connection with the Swiss National Exhibition, which is to take place from May to October, 1914. The following are the groups contained in the schedule:—1, Landscape gardening; 2, floriculture; 3, ornamental trees; 4, fruit trees; 5, vegetables; 6, bouquets; 7, scientific horticulture; 8, sundries. Full information may be obtained from M. SCHENK, President of the Horticultural Committee, Botanic Gardens, Berne.

MANUAL WORK IN RURAL SCHOOLS.—There will be a conference in the education tent at the Royal Agricultural Society's Show at Bristol at 2.30 p.m. on Saturday, July 5. Mr. W. FRANCIS RANKINE will read the opening paper entitled "Manual Work of Various Kinds in their Relation to Rural Schools." The conference has been promoted by the Education Committees of Gloucestershire and Somersetshire, and it is anticipated that it will be attended by many school teachers and representatives of education authorities.

IRIS AND FOXGLOVES.—In Sir ARTHUR F. HORT's pretty garden and rockeries at Newlands, Harrow-on-the-Hill, the beautifying effect of an occasional plant or tuft of self-sown Foxgloves with its erect spikes of flowers varying from white to rose-purple is well shown. One large bed contains fine varieties of Iris sibirica and I. versicolor crosses home-raised, and with many beautiful tints of colour; the taller sibirica being massed, and the dwarfer versicolor arranged in tufts, the bed having a border of Pernettya mucronata now bearing its white flowers. This arrangement would be effective in any case, but the presence of the Foxgloves before alluded to renders it altogether charming. The same applies to the rockeries and borders of handsome and rare Irises. The occasional Foxglove supplies the natural beauty which the artistic eye appreciates. The Saxifragas of the longifolia, ligulata and Aizoon classes, with some natural hybrids collected by Sir ARTHUR and Lady HORT in the Pyrenees, are finely flowered, and many interesting and rare herbaceous plants and shrubs are in bloom or bud. In the garden devoted to the section of Iris usually termed germanica and the hybrids raised at Newlands there has been an unusually fine show of flowers, though the rough winds of early June damaged the taller spikes.

EXPERIMENTS WITH HELIANTHI IN HUNGARY.—From experiments conducted with Helianthi in Hungary it would appear that this crop is less valuable as a forage crop than the Jerusalem Artichoke. The *Journal* of the Board of Agriculture states that at the experiment station at Magyarovar the yields obtained on a fertile, humid clay soil were:—Helianthi, 2,820lb. stems and leaves and 4,940lb. tubers per acre, and Jerusalem Artichokes 7,410lb. stems and leaves and 18,320lb. tubers per acre. Half of the Helianthi plants failed, against only 7 per cent. of the Jerusalem Artichokes, but even making allowance for this difference the yield of Jerusalem Artichokes was greatly superior to that of Helianthi. The inferiority of Helianthi was also demonstrated by pot experiments with various soils. A further disadvantage of Helianthi was found in the difficulty of harvesting the tubers, spades having to be used on account of the long underground runners, while the tubers of the Jerusalem Artichokes are close together, like those of the Potato, and can be easily harvested with a hoe. Experiments were also undertaken by various influential Hungarian farmers, and the report in each case as to the value of Helianthi compared with Jerusalem Artichokes was adverse. It is concluded that Helianthi may do well in certain circumstances, but that on the whole the results which have been ascribed to it had not been confirmed.

FUNGICIDES FOR LEAF CURL.—The *Experiment Stations Record*, XXVII., No. 9, publishes the statement (see also *Agricultural News*, West Indies, May 24, 1913), that polysulphide of calcium or of barium are as, or more efficacious than, Bordeaux mixture in controlling Peach curl (Exoascus deformans), and also various fungous diseases of the Apple. They have been used also with success as preventives of mildew of Rose and other plants. In the case of leaf curl of Peach barium and *not* calcium polysulphide should be used, since the former does no harm to the foliage or flowers, whereas calcium polysulphide destroys the foliage.

ROTHAMSTED EXPERIMENTAL STATION.—A new wing has been added to the laboratories of this experimental station under the Lawes Agricultural Trust Committee, and the building will be opened on the 27th inst. by the Rt. Hon. WALTER RUNCIMAN, President of the Board of Agriculture.

THE LENGTH OF LIFE OF SEEDS.—In illustration of the variable length of life of seeds the following list, published by Mr. CH. CLEMENT in *Le Nord Horticole* (see also *Le Moniteur du Jardinier*, June 5, 1913), is of interest. Seeds which last the year only:—Cerfeuil, Strawberry, Salsify, and in some seasons various other plants. Two years:—Leek, Onion. Three years:—Carrot, Celery (3 or 4 years), Spinach, Lettuce, Radish (3-5). Four years:—Cardoon, Salad Beet, Celery, Cucumber, Tomato. Five years:—Chicory, Melon (5-7).

IMPERIAL BOTANIC GARDEN, ST. PETERSBURG.—The famous St. Petersburg Garden, founded by PETER THE GREAT, celebrates this year its 200th anniversary. A fête in honour of the occasion will be held during the present month and invitations have been sent to horticulturists in various parts of the world. We offer our congratulations to the distinguished Director, M. A. FISCHER DE WALDHEIM, on the way in which he is causing the gardens to sustain the great reputation which they have earned during their two centuries of existence.

50,000 TULIPS.—We envy those who visited in May the centenary celebration of der Freiheitskriege, which is being held in Breslau. In the neighbourhood of the Centenary Hall were massed in great beds 50,000 Darwin and late-flowering Tulips, and the illustration of the display given in *Möllers Deutsch Garten Zeitung* enables us to imagine the splendour of the sight. Among the varieties of Tulips used were Golden Crown (orange and red), Ph. de Commines, La Tulipe Noire, Fra Angelico (dark red), Harry Veitch, William Pitt, La Merveille, Pride of Haarlem, Mrs. Farncombe Sanders (red shades), Baronne de la Tonnaye (dark rose), Fille chérie (rose), Gretchen (delicate rose), The Fawn (flesh and salmon), Orange King (salmon red), Bronze Queen (bronzy-red), Erguste (mauve), Painted Lady (white, with delicate mauve), and Gesneriana lutea (canary yellow). The beds on one side of the broad path contained mixed colours; those on the other consisted each of pure colours.

TOMATO ITALIA.—A note in *Le Jardin*, June 5, 1913, draws attention to the merits of a variety of Tomato known as Italia, which is grown largely for export in the neighbourhood of Nantes. The variety has been tried in the South of France and has given good results; beyond stating that it is of good appearance and an excellent cropper our contemporary gives no details of its peculiarities.

A TROPICAL UNIVERSITY FOR AGRICULTURE.—The project of establishing an agricultural university in the Tropics has made some progress towards realisation, and already claims are being urged on behalf of the West Indies and of Ceylon as the seat of this university. That a well-equipped institution for agricultural education and research is required there can be no doubt. The British Empire is largely a tropical empire, and it is to be regretted that at the present time British subjects concerned in the development of tropical countries feel themselves constrained to turn to American institutions when they require expert agriculturists. Such is, to our own knowledge, the case in certain instances—at the present time. What the institution should be called a university is a matter of some importance. All will be agreed that it should be of the highest standard but few will maintain that it is other than a

misnomer to describe a specialist institution in universal terms. The projected institution should be called the British Institute of Tropical Agriculture. Into the rival claims of the different stations we do not propose to enter, though we may note that Ceylon has formed already a committee in London in order to press its claims. Naturally, also, the West Indies are anxious for this "place in the sun." But whether the one or the other country be chosen it is important that the institute should not be under the sole jurisdiction of the Government of the country in which it is situated. Indeed, it may be predicted that the Colonial Office, which cannot but be deeply interested in the scheme, will at the proper time see to it that if the institute be British in name it will also be British in reality—and that it will serve the purposes of agriculture throughout the tropical dominions of the Empire.

RETARDING PÆONY BLOOMS.—The *American Florist* publishes the following directions issued by the Horticultural Society of Chicago for intending exhibitors of Pæony blooms:—"The Pæony often opens all, or nearly all, its blooms at the same time, giving a great surplus of flowers for a few days and none afterwards. It is not generally known that the blooming of Pæony buds can be very easily delayed for from several days to several weeks, depending on the variety and the method of treatment. To delay the opening of the blooms for a few days they are cut when the petals are just loosening, but when none of them have turned back. All the leaves are removed, except a few of the upper ones, sufficient to give the flower a proper setting of green. They are then wrapped somewhat snugly—one dozen or fewer in a bunch—in two thicknesses of damp (not wet) newspapers, leaving the lower four or five inches of the stems uncovered. The bundles of blooms so wrapped are placed in jars of water so that the lower one-third of the stems is submerged, and placed in a cold, dark place. A cool cellar is an ideal place. In this condition they will keep up to a week without opening, but will open very quickly when unwrapped and brought into the light and warmth. If it is desired to retard them a longer time they are cut earlier, while showing full colour, but before any of the petals have loosened at all, and treated in the same way. The tighter the bud is when cut the longer it will keep. Some varieties can be retarded only a few days in this way without being injured, while others can be held back for a very long time. The professional pæony grower, after preparing the blooms as described, will place them in cold storage warehouses, where the temperature is kept very low and perfectly even, and will hold them there for six or more weeks in the case of some varieties. There are probably a million or more Pæonies stored in this manner every season by florists in Chicago. Where the advantages of artificially cooled storage with an absolutely even temperature cannot be had it is probably not advisable to attempt retarding the blooms over two weeks in this way, while some varieties can be held only a very few days."

R.H.S. GARDENS CLUB.—The annual gathering of the past and present members of the R.H.S. Gardens Club took place on the 14th inst., when a visit was made to the JOHN INNES Institution, Merton. Prof. BATESON acted as guide, and pointed out the various experiments which are being conducted there in plant-breeding and the investigation of diseases. He explained certain experiments which are being made in plant-breeding, which, it is hoped, will throw a light on the characters of inheritance. A series of crosses with Nasturtiums were brought to the notice of the visitors, the most interesting being one made between a bush or dwarf variety in which the anthers are aborted and a double yellow variety which is wholly male. This cross produced the common hermaphrodite form, just like a common garden Nasturtium. The results of experiments in determining which varieties of Apples and Plums are self-sterile or self-fertile were pointed out; for example, it is found that Monarch Plum is self-fertile, whilst Coe's Golden Drop is sterile with its own pollen. Apple Lord Hindlip is self-sterile. Experiments in streak disease of Sweet Pea, in which the plants were infected with the fungus Thielavia basicolor, were interesting as showing that, so far, no trace of the streak disease had resulted. Specimens of Winkler's Graft hybrids between Solanum nigrum and Tomato were especially interesting, and prove conclusively that the germ cells are derived from tissue of the sub-epidermal layer. Many crosses between Primulas, Begonias, Calceolarias, and Capsicums were referred to by Prof. BATESON. Attention was directed to Begonia phyllomaniaca, which has a curious moss-like growth on the stems. By crossing B. heracleifolia and B. polyantha it is easy to raise B. phyllomanica, which was formerly considered a true species. In the grounds experiments are being conducted with garden Peas, and there are trials of Cabbages to determine their behaviour as annuals or biennials. After tea, which was kindly provided by Prof. BATESON, the annual meeting of the club was held, the principal business being the election of officers. Mr. S. T. WRIGHT was appointed President, and Mr. R. J. WALLIS Secretary.

PÆONIA "L'ESPÉRANCE."

PÆONIA "L'ESPÉRANCE" received an Aw of Merit at the meeting of the Royal Horti tural Society held on June 7 last, when sp mens were exhibited by Messrs. KELWAY & S It is a variety of Pæonia Moutan, with v beautiful flowers of sulphur-yellow colour. petals are in three rows, and the flower posse considerable substance, but the crimson stigm and filaments, and the purplish-rose blotches the base of the petals, give an effect very sim to a single variety.



[*Photograph by A. J. Campbell.*

FIG. 184.—PÆONIA "L'ESPÉRANCE": COLOUR OF FLOWERS SULPHUR-YELLOW.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible fo the opinions expressed by correspondents.)

NATIONAL HEALTH INSURANCE.—The fo lowing questions as to who is the employer fo the purpose of the National Insurance Act hav been submitted to the Commissioners, who hav replied as follows:—(9) A man who is carry ing on business as a hauler is employe by a gentleman to do gardening work at th latter's private residence. The employment i regular, the man doing the work when he ha spare time; he is paid 4d. per hour. The em ployer exercises practically no control over him but is in a position to give orders if necessary Decision:—That the employment of the appli cant in garden work is employment under a con

tract of service within the meaning of the Act, and he is liable to be insured. (13) Applicant employs a gardener, who does the work at his own convenience and sends in a quarterly account for work done. The gardener also employs other men, who sometimes take his place in performing the work. Decision :—That the employment of a gardener therein referred to is not employment within the meaning of the Act. (Question 113.) (191) A man was employed to work in a private garden at a remuneration of 3s. per day. He was engaged from day to day for a period of nine days consecutively. Decision :—That employment by the applicant of a man to do work in his garden on the conditions set out in the application was employment of a casual nature, and as it was not for the purpose of the applicant's trade or business it was excepted under part 2 of the National Insurance Act, 1911. (211) A gardener is employed at a private house to attend to a greenhouse, keep up the fires in the winter, etc., and to attend generally to the garden. The employer does not in practice exercise control over the work, but has the right to do so, the gardener receives 4s. per day, and is required to do the work in person. Decision :—That the man who is employed by the applicant to look after his greenhouse and do gardening work under the conditions set out in the application is employed under a contract of service within the meaning of the Act. *A. C. Hill.*

TRIAL OF IRISES.—The attention of growers of Irises is called to the fact that the Council of the Royal Horticultural Society have decided to hold a trial of "Bearded Flag and German Irises" at the Society's gardens at Wisley. Those wishing for their plants to be tried should send two of each in July. *W. Wilks, Secretary.*

CONFERENCE ON SAXIFRAGES.—The President and Council of the Royal Horticultural Society have decided to hold a Conference on Saxifrages (not Sedums or Sempervivums) in the spring or early summer of 1915. Fuller particulars will be issued in due course, but notice is given thus early in order that those interested in this family of plants may have time to prepare material. The Council will be pleased to hear from any willing to contribute a paper at the Conference; or to take part in any way. Notice, 1915 not 1914. *W. Wilks, Secretary.*

THE LATE AMOS PERRY (see p. 410).—By the death of this well-known nurseryman one of the most notable figures in the hardy plant world has been removed. No one appreciated a good hardy plant better than Mr. Perry, and few could more quickly estimate its possibilities. As manager of the Hale Farm Nurseries in the early 'seventies, Mr. Perry was one of a small band of London nurserymen who realised that there was a future for hardy plants. At that time there was much rubbish amongst such plants, for the chaff had not then been separated from the wheat. Many were coarse-growing and weedy, and collections rather than selections were grown as though the sole purpose was to boast of numbers. Robert Parker, T. S. Ware, Messrs. Rollisson and Sons, E. G. Henderson and Son, Downie, Laird and Laing, and Paul and Son were amongst those who grew hardy plants in those days. Robert Parker was the past master among exhibitors of that time, and maintained his supremacy till May, 1875, when he was completely outclassed by a magnificent group staged by the Messrs. Rollisson and Sons. The *Gardeners' Chronicle* reporter of the time referred to the class for eighteen hardy perennials as "the only redeeming feature of the show," three collections being staged. The refusal of Mr. Eyles to accept or find room for Ware's plants on the occasion referred to on p. 410 was something Perry never forgot. His compensation came in subsequent years when these plants were received gladly. Looking back, one realises what a vast change has taken place. Many hundreds of new species and varieties have come upon the scene. The methods of propagation remain very much as of old, but cultural methods have been greatly improved. The Delphiniums and Phloxes of Perry's early days have been enormously improved, while Pæonies and Pyrethrums do not show quite the same degree of development. *E. H. Jenkins.*

RHODODENDRON CINNABARINUM.—In Mr. Wyndham Fitzherbert's interesting notes upon Himalayan Rhododendrons he describes the blossoms of R. cinnabarinum as "purplish-red," thereby conveying a disagreeable suggestion of magenta. This shrub varies a good deal both in colour of the corolla and in date of flowering. None of the varieties I have show the slightest tinge of purple. The earlier variety, now over (June 16), bears flowers of orange-rose, the mouth and interior of the tube being soft yellow. The later, which now shines afar in the sunshine with a fiery glow, displays vermilion and bright yellow tints. I enclose a few blooms in which you will not detect any purple hue. I think Mr. Fitzherbert must have had R. Roylei in mind, which resembles the other in habit and shape of flower. R. cinnabarinum is one of the hardiest of Indian Rhododendrons. All it requires is reasonable shelter from wind, for the young foliage is very soft and brittle. It is a profuse flowerer. One bush here, nine feet high and as much through, was lately so loaded with blossom that hardly a leaf was visible. It should not be forgotten that the honey, which showers out of the tubular flowers on the slightest shaking, is deadly poison, as are all parts of this plant. Sir Joseph Hooker recorded the loss of some of his mules that browsed on the unfamiliar foliage. *Herbert Maxwell, Monreith.*

SOCIETIES.

ROYAL HORTICULTURAL.

JUNE 17.—The usual fortnightly meeting of this Society was held on this date in the Society's hall, Vincent Square, Westminster. The exhibition was a good one, but there was nothing of outstanding importance in the exhibits, the majority of which were composed of hardy flowers. Other subjects before the Floral Committee included Roses, Carnations, Ferns, and ornamental-leaved woody species. This Committee recommended no fewer than fourteen Awards of Merit.

The exhibits of Orchids were, as usual, remarkably good, and the Orchid Committee recommended two Awards of Merit and two Cultural Commendations.

The Fruit and Vegetable Committee made no award to a novelty; but a splendid exhibit of vegetables in this section was awarded a Gold Medal. At the 3 o'clock meeting a lecture entitled "The Evolution of Plants and the Directivity of Life as shown by Vegetative Structures," was delivered by Prof. G. Henslow.

Floral Committee.

Present: H. B. May, Esq. (in the chair), and Messrs. T. Stevenson, J. W. Moorman, C. T. Druery, John Dickson, C. Blick, Charles Dixon, W. J. James, George Paul, W. Bain, R. Hooper Pearson, W. P. Thomson, H. J. Jones, John Jennings, Charles E. Pearson, E. H. Jenkins, Charles E. Shea, J. F. McLeod, F. Page Roberts, John Green, C. R. Fielder, J. T. Bennett-Poë, J. W. Barr, and W. R. Cranfield.

Messrs. W. CUTBUSH & SON, Highgate, exhibited miscellaneous flowering plants, some of a hardy, and others of a tender nature. Two good Begonias were shown in the varieties Bertinii and Corallina, both suitable for greenhouse decoration. This firm had remarkably well-flowered Hydrangeas, a batch of the pretty-leaved Coleus Cordelia, and a collection of Carnations of the perpetual-blooming type. (Silver Flora Medal.)

Mr. L. R. RUSSELL, Richmond, filled a large table with variegated shrubs, gold and silver-leaved Ivies, Olearia macrodonta in bloom, a fine batch of Cistus florentina, and other subjects suitable for the embellishment of pleasure grounds. (Silver-gilt Banksian Medal.)

Messrs. JAMES VEITCH & SONS, LTD., King's Road, Chelsea, showed banks of Pæonies against a background of Delphiniums; also Rodgersia pinnata alba, Rosa Moyesii, with flowers of an uncommon shade of brick-red; Primula capitata, and numerous varieties of Canna. (Silver Flora Medal.)

Messrs. H. B. MAY & SONS, The Nurseries, Upper Edmonton, showed a collection of hardy Ferns, with most of the finest crested, plumose, tessellated, and other forms. One of the most graceful of all was Polystichum aculeatum gracillimum Drueryi. (Silver-gilt Banksian Medal.)

Messrs. B. R. CANT & SONS, Colchester, filled a large table with Roses of almost all types, well-bloomed standard plants being used as a background. The trusses of flowers of White Dorothy hung in dense clusters, and in contrast was the fine red Hiawatha. The beautiful single flowered Una showed to advantage in a bamboo epergne, whilst a companion stand was filled with the single rosy Morgenrot. (Silver-gilt Flora Medal.)

Messrs. HOBBIES, LTD., Dereham, Norfolk, showed several new Roses, including the variety Pink Pearl, which received an Award of Merit last season.

Mr. W. EASLEA, Danecroft Nurseries, Eastwood, Essex, had several new Roses. The rich cerise-coloured blooms of Cherry Ripe, a decorative hybrid Tea variety, were much admired. A pretty, fragrant pink Rose was shown under the name Oraænta.

Messrs. STUART LOW & Co., Bush Hill Park, Enfield, arranged an imposing floor exhibit of Roses and Carnations in a ground of Adiantum Ferns. The Roses were especially good, and included such beautiful varieties as Dean Hole, A. R. Goodwin, Sunburst, and Lady Hillingdon. (Silver Banksian Medal.)

Mr. JAMES DOUGLAS, Edenside, Great Bookham, Surrey, exhibited choice border Carnations. The following are a selection:—Amy Robsart (white), Rosy Morn (rose), Annie Laurie (blush), Elizabeth Schiffner (buff apricot), Mrs. Elliott Douglas (yellow), and Fujiyama (glowing red). (Silver Banksian Medal.)

Mr. CHAS. BLICK, Hayes, Kent, showed excellent border Carnations, and also his fine white "Malmaison" variety, Chas. Blick. The white border variety King George is a very beautiful flower. (Bronze Banksian Medal.)

Beautiful blooms of perpetual-flowering Carnations were displayed by Mr. H. BURNETT, Guernsey, for which a Silver Banksian Medal was awarded.

Messrs. JAMES CARTER & Co., Raynes Park, contributed a charming group of English Irises (I. xiphioides) in glass vases and jardinières. The flowers were arranged in batches of distinct varieties, and the colours were blended with good effect. (Silver Flora Medal.)

Messrs. W. FELL & SON, Hitchin, filled a table with pot plants of Primula Bulleyana, for which a Bronze Flora Medal was awarded.

Messrs. J. CHEAL & SONS, Crawley, were awarded a Bronze Banksian Medal for sprays of ornamental-leaved trees and shrubs, with a few hardy flowers interspersed amongst them.

Messrs. H. CANNELL & SONS, Swanley, again showed bunches of zonal-leaved Pelargoniums.

Messrs. H. J. JONES, LTD., Ryecroft Nurseries, Hither Green, exhibited two separate groups, the one being composed of zonal-leaved Pelargoniums, the other of large-flowered Canterbury Bells (Campanula calycanthema). (Silver Banksian Medal.)

Messrs. BEES, LTD., Liverpool, exhibited novelties in hardy flowers, including new Chinese species. Dracocephalum bullatum is said to possess a better constitution than D. grandiflorum, and is suitable for either the rock-garden or flower-border.

Messrs. CARTER, PAGE & Co., 52 and 53, London Wall, were awarded a Bronze Banksian Medal for miscellaneous flowers, including Pelargoniums, Dahlias, and Fuchsias.

Messrs. T. S. WARE, LTD., Feltham, exhibited an imposing group of Pæonies, including the beautiful blush variety Charles Leveque; Geums, Campanulas, Achillea alpina, and other border flowers. (Silver Banksian Medal.)

Messrs. BARR & SONS, King Street, Covent Garden, were awarded a Silver Banksian Medal for hardy flowers, such as Spanish Irises, Ixias, Lupins, Pæonies, Delphiniums, and Liliums.

Messrs. GEO. JACKMAN & SON, Woking, staged border flowers in variety, for which a Silver Banksian Medal was awarded. The fine border Pink, Elsie, was conspicuous; the rosy petals

have a crimson "eye." (Silver Banksian Medal.)

A Silver Flora Medal was awarded to Mr. JAMES BOX, Haywards Heath, for a beautiful exhibit of border flowers. A group of Phlox decussata in the centre included Lindfield Beauty, a variety with pink-and-white petals; the best scarlet Phlox was Baron von Dedem. Large sheaves of Irises, Delphinium Persimmon, Linaria dalmatica (yellow), Lupinus Golden Spire and Oriental Poppies were employed as foils.

Messrs. R. WALLACE & Co., Colchester, arranged a corner group of hardy flowers. At the back were imposing spikes of Eremurus Warei, and a yellow hybrid Eremurus. At one end of the exhibit was a large batch of the showy Aster subcœruleus, with lavender ray florets and an orange-coloured disc. The Ixias in this collection were uncommonly good. (Silver Flora Medal.)

Mr. G. REUTHE, Keston, Kent, was awarded a Silver Banksian Medal for hardy flowers and shrubs, amongst which were noticed the rare Phyteuma comosum, Patrinia palmata and Rhododendron lanata, the leaves of which are covered on both surfaces with a brown tomentum.

Mr. MAURICE PRICHARD, Christchurch, whose exhibits of hardy flowers are always conspicuously good at these meetings, showed the beautiful Lavatera Olbia, the fine blue-flowered Wahlenbergia vincæflora, handsome spikes of Delphiniums, Lupins and other border flowers. (Silver Banksian Medal.)

Mr. AMOS PERRY, Enfield, showed specialities in hardy flowers, arranging large batches of various kinds, including Gillenia trifoliata, Betonica grandiflora superba (rosy-mauve), and Campanula persicifolia Die Fee, a beautiful clear blue variety. (Silver Banksian Medal.)

The WARGRAVE HARDY PLANT NURSERY, Liverpool Street, London, showed a collection of border flowers, and, as a separate exhibit, a well-arranged rockery. The Gaillardias exhibited by this firm were especially good.

Messrs. KELWAY & SON, Langport, Somersetshire, staged splendid blooms of Pæonies and tall spikes of varieties of Delphiniums. The Pæonies remained very fresh, notwithstanding the tropical conditions in the hall, and we were especially pleased with the varieties Millais, a single variety coloured crimson-maroon, and James Kelway, blush. The two prettiest Delphiniums were Silver Buckle (opal-blue) and Grandiflora plena (cobalt). (Silver Flora Medal.)

Messrs. JOHN PIPER & SONS, Bayswater, were awarded a Bronze Banksian Medal for an excellent exhibit of Delphiniums.

Some very beautiful seedling Delphiniums were exhibited by Mrs. T. H. BARNARD, Kempton Hoo, Bedford, with plants of Pentstemon heterophyllus arranged as a border to the group.

Messrs. REAMSBOTTOM & Co., Geashill, King's Co., again showed varieties of the pretty St. Brigid Anemones.

Mr. H. NEWMAN, Watford, exhibited a new border Pink named Challenger. The flower is large, very double, fragrant, and coloured rose-pink.

Hardy flowers were also exhibited by Messrs. W. & J. BROWN, Peterborough (Bronze Banksian Medal); Mr. R. C. NOTCUTT, The Nursery, Woodbridge (Bronze Banksian Medal); Messrs. JOHN PEED & SON, West Norwood (Bronze Banksian Medal); Mr. FRANK LILLEY, Guernsey (Bronze Banksian Medal); Messrs. PAUL & SON, Cheshunt (Silver Banksian Medal); Messrs. R. H. BATH, LTD., Wisbech (Silver Flora Medal); Messrs. WHITELEGG & PAGE, Chislehurst (Silver Banksian Medal); Messrs. G. & A. CLARK, LTD., Dover; Messrs. PHILLIPS & TAYLOR, Bracknell (Bronze Banksian Medal); and Messrs. GEO. BUNYARD & Co., LTD., Maidstone (Bronze Flora Medal).

AWARDS OF MERIT.

Astilbe "Britannia."—A very fine, deep-pink hybrid allied to the now well-known Peach Blossom and Queen Alexandra, but of a much richer colour and with rather more of the habit of A. chinensis. The panicles are held well erect and branch in an open manner, with the branchlets nearly horizontal. As compared with other varieties, the fine foliage is one of the plant's best points, the lowest leaves being well retained and spreading to form a base to the lighter and more open panicles. The nodes are crimson. Shown by Mr. W. PROFITTLICH.

Blandfordia Cunninghamii.—This species, closely allied to the Tasmanian B. grandiflora, to which it is referred in *Index Kewensis*, was discovered by Allan Cunningham on the Blue Mountains of New South Wales. It is said to be the most handsome and profuse-flowering in the genus. The broadly conical flowers, each 2 inches long, are of rich orange colour, more or less red at the contracted neck. They hang in a cluster of ten to twenty at the top of a 2½ feet scape. The leaves are firm-textured and sedge-like, borne in two ranks, channelled on the upper surface, keeled down the back, about 1½ foot long and ¼ inch wide. As figured in the *Bot. Mag.*, tab. 5,734, the perianth is much redder outside than in the specimen exhibited. (Shown by A. WORSLEY, Esq., Isleworth.)

Gladiolus "Queen of the White."—A pure white variety, with large finely formed, open flowers, and long, neat, stout spike. The young flowers show a faint blush tint, and a spot of crimson is evident at the base of the tube, but these are not blemishes. The forced spikes shown were 3-4 feet in height, with from six to eight expanded flowers and as many or more developing buds. Shown by Mr. B. HOOGSTRATEN, Sassenheim. This award was recommended by a joint committee of members of the Floral Committee and the National Gladiolus Society.

Carnation "Thomas à Beckett."—This is a pale, yellow-ground fancy border variety, with broad, purplish-pink edge and a few light splashes and spots of the same colour. The flower is very large and full, and the calyx is stout and non-bursting, but the centre of the flower is rather weakly formed. No scent was noticed, and the stems were scarcely stout enough for so large a flower.

Carnation "Scarlet Gem."—A coral-scarlet border variety; flower rather thin in substance as shown, but beautifully formed, with very smooth, flat petals and fine form. The flower is well held on the stem and the calyx non-bursting, but we were unable to detect any fragrance. (These two shown by Mr. C. BLICK, Hayes.)

Pæony "Gismonda."—A rose-pink double herbaceous Pæony. The outer petals are a shade paler, and, though scarcely longer than the inner, spread at a distinct angle from them. The centre of the flower is compact and full, but rather unpleasantly flat-topped. (Messrs. R. H. BATH, Ltd.)

Philadelphus "Norma."—This is probably the best of the large-flowered single varieties. The flowers are as much as 2 inches in diameter, with four full, rounded, snowy-white petals. They are borne in great profusion in threes at the end of all the short axillary branches from last year's wood. (Shown by Sir TREVOR LAWRENCE, Bart.)

Rose "Mrs. George Norwood."—This is a very bright, rich pink hybrid Tea Rose of particularly good form and rich fragrance. The petal reverse is a shade deeper than the upper surface. The flower is long and pointed, and the outer petals gain a pointed shape from the recurving margins. Said to have been derived from Frau Karl Druschki ♀ × Mme. Gabriel Luizet ♂, it has the stout growth and foliage of the former, but combines the compacter habit with something of the colour and fragrance of Mme. Gabriel Luizet. (Shown by Mr. E. J. HICKS.)

Rose "Paul's Lemon Pillar." A lemon-white pillar Rose, of great beauty, substance and fragrance, said to have been derived from Maréchal Niel. The foliage is large, glossy, firm-textured and handsome. Many flowers were finely formed, but some of the blooms exhibited showed a tendency to doubling in the centre. (Shown by Messrs. G. PAUL & SON.)

Spiraea Sargentiana.—A new shrubby Chinese species forming an irregularly-rounded bush some 3 feet high and flowering profusely in freely-branched, dense-flowered corymbs on the axillary branches from last year's growths. The flowers are creamy-white, individually scarcely more than a quarter of an inch in diameter, and with round petals, no larger than the disc, so distantly set that the sepals show green between them. The corymbs are from 1 to 3 inches in diameter. The leaves are small and vary in shape from round to lanceolate, but generally are about half an inch in length, with two or three teeth at the blunt tip. They are pale green and thin-textured, and slightly tomentose on the under surface. (Shown by the Hon. VICARY GIBBS; gr. E. Beckett, V.M.H.)

Saxifraga Brunoniana.—This quaint little species has been several times shown of late, and now secures the award. Its most pleasing and distinctive feature is the mass of crimson, thread-like runners which rise from the lower leaf axils and rapidly form a colony of daughter plants round the parent tuft. The foliage consists of Draba-like rosettes of small linear-oblong leaves with a row of hairs down each edge. The yellow flowers are the plant's least claim to beauty. They form a loose, few-flowered corymb which rises some 4 to 6 inches above the foliage, the individual flowers being ⅜ inch in diameter, regular in shape, but with lanceolate, narrow petals. (Shown by Mr. W. FELLS.)

Statice Suworowii alba.—A finely grown pot-plant of the albino form of this now well-known annual was shown by Mr. R. C. NOTCUTT. The form and habit are identical with those of the type, showing dense-flowered, freely-branched, long cylindrical spikes.

Sweet Pea "Edith Taylor."—A very rich cerise variety, carrying four flowers to a stem, and with erect, broad, much-waved standards. (From Mr. T. STEVENSON, Addlestone.)

Sweet Pea "Frilled Pink."—A large-flowered variety with much-waved double standards. The colour is a pleasing shade of pale pink, and the stems each carried three flowers. (From Messrs. DOBBIE & Co.)

Trollius patulus, "Bees' variety."—Trollius patulus is described as native of Cappadocia, Caucasus and Persia, but in 1904 Forrest collected seed of the type and of this new form of it in the Kari Pass, on the Yangtse-Hokong divide (S.E. Tibet) at an altitude of 12,000 feet. The Bees' variety is dwarfer and larger-flowered than the type. It scarcely exceeds 9 inches or a foot in height, and the flowers, borne solitarily or in twos or threes, are as much as 2 to 3 inches in diameter, generally with five, but frequently six, large, rich-yellow sepals, which spread horizontally and give a Caltha-like appearance to the flower. The small, linear orange-coloured petals are shorter than, and hidden by, the stamens. The leaves are small, palmately cut into 3-5 main lobes, and sharply serrated. (Shown by Messrs. BEES, Ltd.)

OTHER NOVELTIES.

Messrs. BEES exhibited a very interesting strain of Primulas derived from reciprocal crosses between Primula Bulleyana and P. Beesiana. The names of Rosy Bees, Ruby Bees, and Orange Bees, given to selected forms, were rather fantastic, but the shades of colour were unusually pleasing and promising. The new Chinese Dracocephalum bullatum, a prostrate species with large-flowered, blue heads, was also noteworthy. The flowers are not so large as in D. grandiflorum, but the plant is quite hardy and a much better "doer."

Orchid Committee.

Present: J. Gurney Fowler, Esq. (in the chair), and Messrs. Jas. O'Brien (hon. sec.), R. B. Norman White, Gurney Wilson, C. J. Lucas, W. Bolton, F. Sander, F. M. Ogilvie, F. J. Hanbury, T. Armstrong, A. McBean, J. E. Shill, J. Charlesworth, H. G. Alexander, A. Dye, W. H. White, C. H. Curtis, S. W. Flory, Sir Jeremiah Colman, Bart., Sir F. W. Moore, J. S. Moss and Sir Harry J. Veitch.

Baron BRUNO SCHRODER, The Dell, Englefield Green (gr., Mr. J. E. Shill), showed very fine specimens of two remarkable forms of Cattleya Warscewiczii, each with four flowers on a spike, the variety Marga being of the finest dark type, and the form named delicata had blush-tinted flowers with white labellum, with some purple colour in front of the yellow disc. Also the large and handsome Odontoglossum crispum The Baroness, and the fine white Cattleya Gaskelliana Fairy Queen, for both of which see Awards.

J. GURNEY FOWLER, Esq., Glebelands, South Woodford (gr., Mr. J. Davis), showed his richly coloured Odontioda Cooksoniæ Fowler's variety,

which received a First-class Certificate in 1912, and which had greatly improved under cultivation, its rich, deep-red flowers, tipped and margined with white, being well in the front rank of handsome hybrid Orchids. A Cultural Commendation was accorded to Mr. J. Davis.

Mr. J. GURNEY FOWLER also showed Lycaste Imschootiana (cruenta × Skinneri), illustrated in the *Gardeners' Chronicle*, December 23, 1893, p. 775, the original record (Lycaste Skinneri × Maxillaria nigrescens) being given with the suggestion of the proper record now accepted.

H. S. GOODSON, Esq., Fairlawn, Putney (gr., Mr. G. E. Day), was awarded a Silver Banksian Medal for a small but select group, which included Odontoglossum eximium Leopold and O. eximium Clarksonii, both blotched with dark purple, and O. eximium Goodsonii, a pretty colour variation, the blotching being cinnamon-brown. O. Lambeauanum St. David, O. Snowflake, the pretty and distinct O. G. E. Day; O. Pescatorei Sidneyanum, a clear-white flower with prettily marked lip; O. Nebulosum, etc., were also noted.

Mr. S. W. FLORY, Tracy's Orchid Nursery, Twickenham, was awarded a Silver Banksian Medal for a group of specially fine Cattleya Mossiæ, C. Mendelii, Lælia purpurata, and Lælio-Cattleyas, among which were good L.-C. Aphrodite and a very handsome form of L.-C. C. G. Roebelen. Curious plants noted were Oncidium unicorne, O. Massangeanum, and Stelis ophioglossoides.

Messrs. CHARLESWORTH AND Co., Haywards Heath, were voted a Silver Banksian Medal for a select group, in which were their new Oncidioda Bella (see Awards), a fine specimen of Grammangis Ellisii, Peristeria elata, Brassavola Digbyana, with three flowers; Odontoglossum crispum xanthotes, and other Odontoglossums, and Miltonia Bleuana rosea.

Messrs. STUART LOW AND Co., Bush Hill Park, secured a Silver Banksian Medal for a group at the back of which were good specimens of Dendrobium Dalhousieanum, with red Renanthera Imschootiana and various other Dendrobiums; and the very large Oncidium crispum enfieldense. Others noted were Cœlogyne pandurata, Bulbophyllum siamense, and B. Godseffianum.

Messrs. HASSALL AND Co., Southgate, were awarded a Silver Banksian Medal for an effective group of good Cattleya Mossiæ, including the best white form of C. M. Wageneri, C. M. Reineckiana, C. M. cœrulea, and C. M. Fletcheri, a pretty white flower with a faint blush tint.

FRANCIS WELLESLEY, Esq., Westfield, Woking (gr., Mr. Hopkins), sent the beautiful Cattleya Mendelii His Majesty the King, which received a First-class Certificate and Royal appreciation at the Temple Show, 1908.

Sir MERVYN BULLER, Spratton, Northants, showed a fine form of Lælio-Cattleya Martinetii, with copper-red sepals and petals and purple-veined lip.

Mr. E. V. Low, Vale Bridge, Haywards Heath, showed Cattleya Mossiæ Wageneri, of a clear white with orange-coloured disc to the lip; a very good form of Lælio-Cattleya C. G. Roebelen, L.-C. Aphrodite, King George V., with four handsome flowers on a spike, and L.-C. Martinetii.

AWARDS.

AWARD OF MERIT.

Odontoglossum crispum The Baroness, from Baron BRUNO SCHRÖDER, The Dell, Englefield. A magnificent variety with large and perfectly formed flowers, the sepals being nearly as broad as the petals, which were as broad as long and beautifully fringed. The surface of the flower is white with clusters of large but pale violet blotches in the middle area, the violet-tinted reverse side showing through between the blotches. Lip white, with one large chestnut-red blotch in front of the yellow crest and some smaller spotting towards the margin.

Cattleya Gaskelliana Fairy Queen, from Baron BRUNO SCHRÖDER. A finely-formed white flower with a delicate pearly flush on the lip, which has a bright yellow disc. The flowers are fragrant and of good proportions.

Oncidioda Bella (*Oncidium Marshallianum* × *Cochlioda Noezliana*), from Messrs. CHARLESWORTH AND Co., Haywards Heath. A very remarkable and pretty hybrid, showing the dominance of the yellow and brown Oncidium Marshallianum, notwithstanding the fact that the seed-bearer was the scarlet Cochlioda Noezliana. The colouring and the disposition of the blotches closely follow O. Marshallianum, but the other parent is perceptible in the Indian-red colour of the blotches on the inner parts of the segments and at the base of the lip, the expanded front lobe of which, however, is clear yellow, as in O. Marshallianum.

CULTURAL COMMENDATION.

To Mr. W. H. WHITE, Orchid grower to Sir Trevor Lawrence, Bart., K.C.V.O., Burford, for a large specimen of Dendrobrium Victoria Regina, grown in a cool house and bearing a profusion of its pretty deep blue and white flowers.

To Mr. J. DAVIS, gr. to J. Gurney Fowler, Esq., Glebelands, South Woodford, for a fine plant of the deep-red Odontioda Cooksoniæ Fowler's variety.

Fruit and Vegetable Committee.

Present: Jos. Cheal, Esq. (in the chair), and Messrs. W. Bates, Wm. J. Jeffries, E. Perkins, James Vert, Edwin Beckett, W. E. Humphreys, A. R. Allan, H. Markham, J. Davis, A. Bullock, Geo. Wythes, P. W. Duckett, J. Jaques, C. G. A. Nix, A. Grubb, and A. W. Metcalfe.

Messrs. JAMES VEITCH & SONS, Chelsea, displayed an exceptionally fine collection of vegetables set out in the best exhibition manner. Besides excellent examples of such seasonable kinds as straight, crisp-looking Cucumbers, Carrots and Lettuces of both sorts, there also were on show many vegetables which are not often in such perfection at the middle of June. Full-sized sticks of Celery (Superb, White, and Early Rose), Globe Artichokes, Vegetable Marrows (Moore's Cream and the green-striped Defiance) are a selection. Of the Tomatos shown, a dish of the deep-coloured "The Peach," which possesses such an attractive "bloom" and is excellent eating uncooked, attracted attention. (Gold Medal.) Messrs. DOBBIE & Co., Edinburgh, contented themselves with a very good exhibit of Cabbages. The examples of Ellams's Early were unusually large for that variety. McEwan's Early was the largest shown, and all were fresh and firm-hearted. (Bronze Banksian Medal.) A card of Cultural Commendation was awarded to Mr. A. J. COURSE, Biggleswade, for bundles of Giant Asparagus. Mr. S. MORTIMER, Rowledge, Farnham, exhibited fruits of a new Cucumber named Continuity (Sensation × Bounteus), a smooth-skinned variety of excellent appearance.

Scientific Committee.

JUNE 3.—*Present*: E. A. Bowles, Esq., in the chair; Messrs. J. Fraser, W. E. Ledger, G. Wilson, J. T. Bennett-Poe, and F. J. Chittenden (hon. sec.).

Violet with laciniate leaves.—MR. C. T. DRUERY sent a leaf of the sweet Violet with the margins much cut varying from the normal type in the way in which many species of Dianthus vary in their petals.

Daffodils from New Zealand.—Mr. A. E. BOWLES showed flowers of the two varieties of Daffodil "King Alfred" and "Flamingo" now in bloom on plants raised from bulbs received from New Zealand.

Lælio-Cattleya × "*Freak.*"—Mr. G. WILSON showed a plant of Cattleya citrina × Lælia purpurata from the garden of C. J. LUCAS, Esq., Warnham Court, Horsham. The flowers are intermediate in size and colour between those of the parents, and they are produced on a horizontal spike. A Certificate of Appreciation was recommended to Mr. C. J. LUCAS.

Primula conspersa.—Messrs. J. VEITCH AND SONS, LTD., showed specimens of this species of Primula from West Kansu, China, raised from seed collected by Mr. PURDOM. It is a species of the farinosa section flowering later than P. farinosa, and with taller stems and larger flowers. The flowers are much the colour of P farinosa.

Cattleya Mossiae bud sport.—Mr. E. H DAVIDSON sent a plant of C. Mossiæ "Golden Ray" having the petals marked with yellow like the labellum. It appears to be a case of irregular peloria, but differing from the usual form of peloria in having the labellum characters showing in the petals, whereas in the usual form the petal characters show in the labellum.

HORTICULTURAL CLUB.

JUNE 17.—The monthly house dinner of the Horticultural Club took place on Tuesday last at the Hotel Windsor, Westminster. Sir Frank Crisp, Bart., President, presided over an attendance numbering 65. After dinner the company adjourned to the new club room on the first floor, where a lantern lecture was delivered by Mr. Arthur Pullen Burry, of Sompting, near Worthing, on transverse travelling hothouses and their value for intensive culture. The lecture was as follows:—

TRANSVERSE TRAVELLING HOTHOUSES.

More than twenty years have elapsed since it was pointed out what great advantages a movable hothouse would have over a fixed house. Since that time many attempts have been made to solve the problem, "How to move a large structure as a whole with all its pipes, boiler, ventilating gear, cold water supply, and perhaps a hanging crop from the roof, without danger of collapse, breakage of glass, running off the rails, premature decay, uncertainty of action, or the many accidents to which, from its very nature, the machine would be liable."

The experiences of those who used the so-called "travelling" structure of those days were terrible. After a few months the roof would drop owing to the impossibility of satisfactory tying. This caused the flanges of the wheels to grind against the rails, the friction being such that it was only possible to move them, to quote the words of one grower, "by means of a few horses, a quantity of men, and an unlimited supply of sound beer." I pass over the fact that pipes, boilers, ventilating gear, etc., were impossible owing to the division of the houses into short lengths; and when long lengths were constructed, the pipes had to be laid on the ground in duplicate. All these complications are avoided in our invention, and the whole structure, with plants in pots, pipes, boiler, cold water supply, ventilating gear, and, if desired, the man turning the flywheel, can be moved; even the paths are carried with the structure. An acre of land 440ft. by 100ft. is divided up by longitudinal foundations, 16ft. apart centre to centre, and a cement rail 6in. by 5in. cast in moulds is placed thereon: a shallow division wall for the side-lights to shut on is provided at intervals of 40ft. centre to centre, thus making in eleven traverses, sixty beds, 13 yards by 5 yards—a little over two rods—in each bed.

These traverses cost us about £10 each, including two old rails, which act as curbs, and are embedded in the two outer cement rails at either end of the hot-house. In practice, we find that only one is necessary, viz. at the end carrying the boiler and multiplying gear.

It is not necessary that the land be level, except in the 100ft. direction or length of the hothouse. In the other direction there may be varying gradients, as the gutter acts like the back of a book, and allows movement.

The house itself is, in motor-car language, the "tonneau," and can be of any width, or any height under the ridge or eaves. It can, if necessary, take quite large trees, say 9ft. high, in successive shifts, the side-lights in these circumstances opening like barn doors, and back to back, passing with the house through the trees over the cement rails. The usual ventilating gear is used, and in our model the side-lights swing on the plate, and close against the cement division wall in an oblique direction. We find, however, that if the side shutters are short and independent, and simply hooked on to the plate, it is quite sufficient, and the draught is more effectively excluded. If, in winter, there is a draught under the shutters, a little soil sprinkled along the division walls effectually checks it.

The ends of the house are glazed in the usual way. The doors are of matchboard, in the centre, under the ridge. The step up to the door is ten inches in h[illegible]

There is a strengthened 12in. by 9in. plank running down the house from door to door, on which the watering is done, by a hose from

Norwich unions, fixed to a 1in. main under the ridge, and travelling with the house. This is most convenient, and it takes only half an hour for the whole 100ft. by 40ft. hot-house to be satisfactorily watered by one man. The water is supplied from one left and right jointed socket, connected with a stationary watercock, in one of the houses; a short piece of hose carries the union.

The hot-water pipes are simply laid over the stretchers of the "chassis," and are on a dead level. The lay of the land is against the boiler, as in the eleven traverses there is a rise of 4ft., making six inches fall from the boiler to the farthest flow pipe.

The returns, two in each house, are collected at the stretcher next to the last. They hang thereon, and rise up to the plate, thus allowing the crops to pass underneath, and continue outside the house to the thermo-dynamic valve just before the boiler is reached. The boiler is mounted on wheels, stayed to the plate, and runs in an upright balanced position on the outside rail which contains the metal. The flow leaves the top of the boiler and descends to the inside of the last stretcher, passes through both houses under the footway, and rises again with valves at each point to the branch flows. The system works perfectly, and there are 1,000ft. of 4in. pipe on an Anglian boiler, for which the makers only guarantee 900ft., and the returns heat in 1½ hours with a strong north-easterly wind blowing and an uncovered boiler.

A manifest saving in coal will appeal to growers, in that heat is raised in far less time than by the usual lazy gravitational system.

The "chassis" is of pitch pine and cast-iron. The plate measures 3in. by 6in., and the trussed stretchers are simply two planks of 1¼in. by 7in. pitch pine, with blocks at intervals, to carry the purlin posts, and act as distance-pieces for the frames of the gearing. In each stretcher there are four carrying wheels of cast-iron with a bolt through. The frames are cast alike, and used in pairs. They are bolted through the stretchers on either side, and carry a 9in. by 3½in. steel gutter, which, with a 2in. by 4in. plate bolted to each side, carries the roof. These frames rest upon the bolt through the driving wheel, which has a flat bearing surface, and a set of cogs on its side, turned by a small sleeve pinion keyed to the longitudinal shaft which runs with couplings throughout the house. It is affixed at one end, outside the house, to a large cog-wheel, which, in turn, is operated by a spur and pinion in the same way as a clock is geared. The final flywheel is driven by hand, or, if required, by a small portable motor (like a bicycle engine), weighing from 28 to 56 pounds, and simply fixed by fly nuts to the frame carrying the multiplying gear, which is 4 to 1 at the driving wheel and 120 to 1 in all. One man can easily move the house over the necessary 40ft. in twenty minutes without undue effort.

But the most important thing is the manner in which the torque in 100ft. of shaft is taken up, and the work of the shaft synchronised throughout the house. If this difficult problem had not been solved there would have been no transverse travelling hothouses; for the tendency would have been to move the end carrying the multiplying gear first, and so set up an inclination in the house to travel in an immense circle. The friction produced by the endeavour to make it travel in a straight line would soon have smashed up something.

It is obvious that if both ends move simultaneously, the distance travelled is of no moment. One hundred miles might be travelled as well as 100 inches if the gauge were correct, and if the four wheels at the corners which press against the steel rail did their duty.

The spur wheel which moves the driving wheel is loose, and, carrying the shaft, rests one of its sleeves on the flat face of the driving wheel. This engages the driving wheel cogs, so that they are always in true mesh, no matter where the spur wheel is in relation to the driving wheel, thus allowing the shafting a side or lateral movement. The sleeve-spur wheel is held in position by a loose guide piece, like a half plummer block upside-down; this guide rests its wings on two distance pieces between the two frames which are cast on one of them.

Through these distance pieces are two long steel screws, which we call torque-pins, capable of adjustment, and locked by a nut on the outside of the distance pieces. They are easily attainable from the interior of the hothouse.

Thus the shaft turns the sleeve spur wheel, which travels over the flat surface of the driving wheel in its guide, until the guide presses against the torque-pins, which give motion to the house.

These torque-pins are at the end farthest from the multiplying gear, screwed up tight against the guide. At each set of gear and stretcher the amount of torque in the 2in. shaft is relieved by the lateral movement of the guide, which comes in contact with the torque-pins only when desired. It is found by experience that the torque in the shaft when driving a 100ft. by 40ft. hothouse, weighing twenty tons, with the boiler at the end farthest from the gear, is about two threads of the torque-pins for each sixteen feet, so that the pins are screwed out an extra two threads for every set of gear in the house.

In the frame several inches of lateral movement are allowed for.

An interesting experiment took place when the boiler was added and the pipes filled with water.

The house was adjusted and moved perfectly without the apparatus before mentioned, and when the extra weight (1½ tons) was added, it was found that the further end, where the great weight lay, was three-eighths of an inch lazy in starting. At once we had half a turn of the torque-pins eased out, and the same end was then three-sixteenths lazy: it was obvious that another half turn was all that was required.

For all practical purposes, the torque-pins are set once and for all, and any interference with them without knowing their use would no doubt cause trouble.

With reference to the paths, it is found that one bag of cement is about the right proportion for each forty feet of cement pathway.

These pathways are most useful for getting at the crops, being narrow, and suitable to every kind of weather. If properly constructed, with a decent foundation, they do not crack or scarify. Even after they have been used dozens of times, the brush marks upon their surfaces are still visible.

The travelling hothouse having now been certainly accomplished, tried by experience, and not found wanting, it behoves us to look round and see what purposes can be accomplished by its use. These are overwhelmingly many.

SUITABLE CROPS FOR THE TRAVELLING HOTHOUSE.

Thus when one thinks of glasshouse culture, Tomatos, Grapes, Cucumbers, and other smaller crops of less consumption, naturally turn up in one's mind for first treatment, and the present owner of fixed glass is more at home with these important but now poorly paying crops.

Therefore, let us see what can be done with a transverse travelling hothouse, taking the crops as the main source of revenue.

If we grow Tomatos, the best paying time is during May, June, and July, because the foreign outdoor fruits are so good now that the later crops do not pay, and again there is small sale for earlier and more expensive April fruit. To occupy the rest of the year it is usual to follow with Chrysanthemums, but again growers say, "Not much in it," and I know that what they say is true. If, after growing Tomatos until September, you turn your hothouse over a crop of French Beans grown outside, the returns from them will be more if the weather is frosty, or wet and cold, than the Tomatos usually come to during August and September.

The French Beans will last until November, when you should have a traverse of Asparagus ready to force. After that there is plenty of time to have another traverse of the same crop before February, during which month you return to the plot that the Tomatos occupied, and establish a crop of Cauliflower from plants sown in September and covered in a cold frame. Then by March the first, instead of having to provide fresh soil for the Tomatos again, you put the house over a fresh plot of land, and prepare it for your summer Tomato crop. That is the obvious way of doing it; later on I will endeavour to show a more profitable way.

Let us now consider Grapes in the same way. By the transverse travelling hothouse, after the crop of Grapes is over in late autumn or the beginning of winter, the vines will be better for the open air. From Christmas until April your hothouse will be used for successions of, say, Spinach, sown in the autumn, and fine stocky plants. Run the house over this crop, and in a few days Spinach worth four shillings a bushel, even in mild weather, will be gathered, while the outdoor is only worth a shilling a bushel.

It is to be observed that the Spinach continues to grow after the house is removed, although the outdoor plants are standing still.

There is time for at least six crops between Christmas and April, when you wish to have the vines indoors again; but if the vine border is ready with Turnips, Parsley, or Cabbage Lettuce (say, Stanstead Park), an extra crop can be obtained. If, however, flowers are an item with you, the whole period from Christmas to April is occupied in successions of bulbs (e.g., Narcissus), which, even if they do clash with Guernsey produce, are, by reason of their being covered and not outdoor, far superior in quality, and will fetch 2s. 6d. per dozen when the Guernsey produce is only worth 1s. 3d.

Now let us see what can be done with Cucumbers in the same way. Plant up in February, for there are few growers who can make the January planting pay, and let us say that September sees the last of them; this is now, I believe, quite the general way. You have from the end of September till February quite free for the crops before mentioned, and if Chrysanthemums are to follow, move the house over them and save the labour and injury of transplanting; besides, if the weather is mild, they will be better outside than indoors. After they are over, the hothouse is available in January and February for Early Golden Spur in successive crops; Violets, a paying crop at that time of the year, Parsley, Spinach or Cauliflower.

But there are far superior crops and quick successions that require experience and a knowledge that many growers do not possess, and there are possibilities that we, who have in part grown in this way before, have not yet fathomed. Indeed, in times past we have known, but have not had the means to test them.

We admit fully that the experience we have had is small; but what we have done has been highly remunerative and, so far, quite successful.

On Christmas day a Transverse Travelling Hothouse was finishing off a traverse of "All-the-Year-Round" Cabbage Lettuce at 1s. per dozen. The house holds 2,700 plants at 1 foot apart; return £10. Soon after we moved to some autumn-sown Spinach for a few days; crop 40 bushels at 4s. per bushel—£8. The Spinach was attacked by the fly outdoors. The house then established two traverses of Cauliflower, at 1 foot apart, which were cleared off in May at from 2s. to 4s. per dozen; say, 4,000 good ones at 3s. per dozen—returns £50.

In another traverse a crop of Parsley and 55,000 Lilly Langtry Narcissus. The Parsley was sold at 4s. per dozen, when the outdoor was sold at 9d. per dozen—return £5. The Langtry at Easter fetched £35, at only 2s. per dozen. These Narcissi are left in the ground; they will be better next year than this, and ought to fetch £70. Another traverse of Spinach at £8. Then a traverse of autumn-sown Cos Lettuce and Radishes, which, owing to the rust in the Lettuce, only came to £12.

This day, June 2, a crop of outdoor Tomatos, with fruit as large as walnuts, and showing three trusses, with French Beans in flower between the rows, ought, with good markets, to come to at least £40. At the same time, in another traverse, a crop of the same kind is leaving the glass far in advance of the outdoor. The summer crop is to follow the Cauliflower with quick successions of Radishes and Cabbage Lettuce, and if the weather is wet the house will cover the Tomatos instead of forcing the Radishes and Cabbage Lettuce.

For these two last crops there is in summer a constant demand, when the weather is dry, and as it is able to procure the necessary moist atmosphere, the seed germinates and starts away, finishing in six weeks.

After the outdoor Tomatos "All-the-Year-Round" Cabbage Lettuce will be covered, and then a crop of late French Beans, which finishes the successions for the year.

(To be continued.)

YORKSHIRE GALA.

JUNE 18—20, 1913.

ANOTHER success must be added to the long list of flower shows held annually in the Botham Park, York, and known to most people as the Grand Yorkshire Gala. The exhibition, which opened on Wednesday last, was the fifty-fifth consecutive one, and in some respects it differed from those that have preceded it. The most notable change was the grouping of all the horticultural exhibits in one large marquee, which was a great improvement on the old system of several tents of unequal size. The building was similar to the one erected at the International Exhibition last year and at Chelsea this spring, but there were only four bays enclosing an area of 46,000 square feet. Still, its capacity exceeded by about 30 per cent. that provided in former years, the additional room being an advantage both to exhibitors and sightseers. By having all the exhibits under the same roof a finer spectacular effect is possible, whilst the greater air space and the system of top ventilation make the conditions more agreeable. The York Shows are noted for their groups of exotic plants, rock gardens, hardy border flowers, Roses, Begonias, Calceolarias, Gloxinias and Orchids. The large number of trade exhibits were exceedingly meritorious.

Formerly one of the glories of the York Show was the large specimen trained plants, but these are becoming scarcer each succeeding year, partly owing to the dictum of fashion and partly because there is none to take the place of those who took such pride in growing and training them.

The exhibits of fruit and vegetables are never worthy of such an important exhibition, and on this occasion they only reached a very low standard. There were only two classes for vegetables, and the prizes in these were offered by traders, but not a single entry was forthcoming. We think that the Council would be wise to offer greater inducements to attract exhibits of fruits and vegetables, without which an important horticultural show cannot be considered complete. We have nothing but praise for the magnificent exhibits of Sweet Peas, groups of Roses, collections of hardy flowers, Ferns, and Mr. Wood's Alpine garden. There were other attractions which we may mention, including the splendid pot fruit trees shown by Messrs. RIVERS, the flowers, fruits, and vegetables shown by Messrs. SUTTON AND SONS and Messrs. ED. WEBB AND SONS, Rhododendrons by Messrs. J. WATERER AND SONS, and Begonias from Messrs. BLACKMORE AND LANGDON, all of which are noticed more fully below.

Groups of Plants.

The York Shows attract important exhibits of exotic plants, and such groups always show to advantage when they are allowed plenty of space. The central portion of one of three large divisions of the tent was allotted to the two classes for groups of flowering and foliage plants, occupying 300 square feet and 200 square feet respectively. These, together with Messrs. BACKHOUSE AND SON'S non-competitive exhibits, filled the central bay. The collections were equal in merit to those at former shows, but there appeared something wanting to make them appear less formal, probably because each copied his neighbour too closely. There was a want of originality, and it was a relief to turn to the less formal exhibit by the trader, where each subject was given its full value without the group appearing as though set to plumb line and rule. Improvement would be effected if the exhibits were not conterminous, and the space might well be afforded to set them apart.

Mr. PICKERSGILL'S exhibit that was awarded the 1st prize in the larger class was certainly a very imposing one, but when one glanced up the tent the others appeared replicas more or less, with the same central row of tall Palms, the similar foils of Dracænas and Crotons and the ground of dwarfer subjects in foliage and flowers.

Mr. PICKERSGILL'S gardener, Mr. Donoghue, is a skilful cultivator, for the plants were magnificent specimens. There were just enough bright flowers added to enliven the group. The 2nd prize exhibit, shown by Mr. W. A. HOLMES, Chesterfield, was rather overdone with yellow Codiæums, which were set at intervals with precise formality; 3rd, Messrs. R. SIMPSON & SON, Selby.

Mr. W. A. HOLMES, nurseryman, Chesterfield, was placed first in the class for a group occupying 200 square feet, and he was followed by Mr. PICKERSGILL, with Messrs. R. SIMPSON & SON third.

York set the fashion in exhibiting groups of hardy plants with rockery and water-pool, and although this is a more natural method of displaying plants than some adopt, there appears to be plenty of scope for improvement. Messrs. J. BACKHOUSE AND SONS, LTD., York, were placed first. They built up a bank of very large boulders, with a pool at the foot in which were gaily-coloured Nymphæas. At one corner was a bog garden rich to overcrowding in all manner of plants that grow in damp ground, with nooks furnished with Sarracenias, Darlingtonias or Ferns. The 2nd prize was won by Messrs. W. ARTINDALE & SONS, whose group was made to include all that space permitted, affording opportunity to display a great wealth of fine flowers suitable for this phase of gardening. It was less obtrusive in height at the back than some, and for that reason was more pleasing than others, whilst the pool was well disposed, so that it appeared a part and parcel of the scheme. The flowering subjects were all excellently well grown. 3rd, Mr. PICKERING, whose cool, central waterfall was natural, but the finicky rustic work trained with Roses was not in good taste.

The groups of fine stove and greenhouse plants arranged on a table numbered only two. Both were very pretty exhibits, and both exhibitors made the most of the space at their disposal. Messrs. J. CYPHER & SONS, Cheltenham, were awarded the 1st prize, their numerous fine Orchids giving a tone of importance to the collection. Several tall inflorescences of Ixora coccinea, an old but still valuable stove-flowering plant, dominated the background in company with Lilium longiflorum, and set off by Palms. The best of the Orchids were Cattleya Mendelii, Odontioda Charlesworthii, and the pretty, small Oncidium pulchellum. A mass of Ferns and Selaginellas served to hide the pots and table. The 2nd prize was awarded to Mr. W. HOLMES, Chesterfield. This pretty exhibit contained numerous Codiæums, epergnes of Carnations, Dracænas, and, along the front, a drapery of Selaginella.

Beyond the exhibits of Messrs. J. CYPHER AND SONS, the seven classes provided for trained specimen plants were poorly contested. Messrs. CYPHER'S specimens, too, were inferior to those which they have exhibited in the past. This firm were the only exhibitors in the class for a collection of stove or greenhouse plants in bloom, arranged in a space of 20 feet by 10 feet. The plants were moderate-sized specimens of Statice intermedia, Clerodendron Balfouri, Anthurium Scherzerianum, Bougainvillea glabra, Polygala dalmaisiana, Clerodendron fallax, Erica Cavendishiana, and Ixora Williamsii. Messrs. CYPHER AND SONS had also the best exhibit of a single specimen plant in bloom in an excellent plant of Clerodendron Balfouri; and they also excelled for three ornamental, fine foliage or variegated plants; three stove or greenhouse plants; six ornamental fine foliage or variegated plants; and three ornamental fine foliage or variegated plants. Messrs. R. SIMPSON AND SON showed the best three plants of Codiæum (Croton).

RHODODENDRONS.—The President, Lord Bolton, offered the sum of £10 for the best group of Rhododendrons arranged in a space of 200 square feet, and the prize was won worthily by Messrs. JOHN WATERER & SONS, Bagshot, who had no competitor. The exhibit was arranged as a crescent-shaped bed, the Rhododendrons being relieved with bronze and green-leaved Maples. The flowers were very fine, especially those of the varieties Sunshine, rose-coloured with yellow blotching; Beauty of Bagshot, rosy-pink and yellow on a light ground; and Maggie Heywood, a fine light-coloured variety.

CARNATIONS.—The finest Carnations, arranged in a space of 12 feet by 6 feet, was shown by Mr. L. PICKERSGILL, who employed "Malmaison" varieties exclusively. The plants were all well bloomed, with flowers of a useful but not over-large size, and were remarkably vigorous in foliage. The only other competitor, Mr. W. LANGSTAFFE, York, was awarded the 2nd prize.

PELARGONIUMS.—The York shows still make provision for trained Pelargoniums, and the exhibits appear to have still an interest for visitors. The largest class was for twelve Zonal, Nosegay or Hybrid Nosegay Pelargoniums, and, as is usual in such exhibits, the 1st prize was awarded for the largest plants. They were shown by Mr. HENRY PYBUS, Monkton Moor, Leeds, who repeated his successes of former years, no doubt with the same plants. Mr. PYBUS was also successful in the class for six plants of similar types, but he was placed second to Mr. JOHN CLARKE, Clifton, York, in the class for three plants.

The best group of Show Pelargoniums was staged by Mr. H. E. LEETHAM. Alderside, York (gr. Mr. R. Keighley.)

The best group of tuberous-rooted Begonias was shown by Mrs. FERRIER, York, but there was not a great variety of colours in her collection, the plants being mostly red, salmon, and white varieties. 2nd, Capt. WALKER.

The Calceolarias in the class for a group arranged for effect were exceptionally good, especially those shown by Mr. S. LEETHAM, York, who had large, well-flowered plants. 2nd, Capt. WALKER.

The best Gloxinias were shown by Mrs. GEORGE CRAVEN, Moorlyn, York, whose plants were of exceptional merit. 2nd, J. ROWNTREE, Esq., Clifton Lodge, York.

Roses

The exhibits of Roses were amongst the most important features of the show, and the competition was very keen in the different classes. Several noted growers took part in the contests, the most important of which was for 72 blooms, in not fewer than 36 varieties.

Messrs. D. PRIOR & SON, Colchester, won the 1st prize in the Premier Class, with blooms of very large size. Amongst the finer flowers were Oberhofgartner Terks, a magnificent pale pink Rose of most exquisite form; Maman Cochet, J. B. Clark, Ethel Malcolm, Mrs. John Laing, Bessie Brown, Alice Lindsell, Mme. Jules Gravereaux, J. H. Welch, Maréchal Niel, and Lyon Rose; 2nd, Messrs. B. R. CANT & SONS, Colchester.

The 1st prize for 48 blooms in not fewer than 24 varieties was awarded to Messrs. J. BURRELL & Co., Cambridge, for full, fresh flowers of Mabel Drew (cream), Hélène Guillot (blush), Edward Mawley, His Majesty, William Shean, a pink flower of fine shape; Maman Cochet, Lyon Rose, Bessie Brown, Dean Hole, Mme. Jules Gravereaux, Mrs. Jos. H. Welch, and others. The 2nd prize was awarded to Messrs. D. PRIOR & SON.

The best exhibit of 36 Roses in 18 varieties was staged by Messrs. B. R. CANT & SONS.

Messrs. J. BURRELL & Co. won the premier prizes in the classes for 24 distinct varieties and 18 distinct varieties respectively.

In the smaller classes for 18 and 12 distinct varieties, the 1st prize-winners were Mr. G. W. READER, Naburn Ferry, York, and Mr. W. HUTCHINSON, Kirby Moorside, respectively

GROUPS OF ROSES.—Three exhibits were forthcoming in the class for a collection of pot Roses in bloom, in spaces measuring 15 feet by 7 feet. Two of the groups were very fine, and the best was shown by Mr. WM. TODD, York The centre of the display was composed of the variety Mrs. John Laing, with a tall, rambler variety as a foil. At the back were archways of

pillar Roses, and beneath these excellent blooms of hybrid-perpetual varieties, the white Frau Karl Druschki being conspicuous. 2nd, Mr. W. LANGSTAFFE, York, who showed especially good specimens of pillar Roses.

The 1st prize in the smaller class was won by Mr. WM. TODD, York, with a group containing many excellent rambler varieties, the large-flowered American Pillar showing to especial advantage in the centre. 2nd, Mr. W. LANGSTAFFE.

Nothing was better in the Rose classes than Messrs. W. & J. BROWN'S table of decorative varieties in the class for an exhibit occupying 6 feet by 4 feet. This collection was amongst the finest displays in the show. The blooms were staged against a ground of black velvet, and the front of the exhibit was festooned with ramblers, whilst in the centre was a magnificent epergne of the single rose-coloured Mrs. Rosalie Wrinch, crowned with the yellow and blush Margaret Molyneux. In the foreground was a splendid vase of the fine Duchess of Wellington variety; the long buds were of perfect shape, and coloured citron and gold. Other notable varieties were Mrs. A. E. Coxhead, Mme. Abel Chatenay, and Irish Elegance. The 2nd prize was awarded to Mr. GEO. PRINCE, Oxford, and this group was also of exceptional merit. Prominence was given to the variety Juliet, but the blooms were rather small. The masses of General McArthur and Mme. Mélanie Soupert displayed in this collection were superb.

Orchids.

Messrs. JAMES CYPHER AND SONS were the only exhibitors in the class for a table of Orchids measuring 12 feet by 5 feet arranged for effect. They contributed an excellent exhibit, arranged with good effect, and comprising fine Cattleyas, Sobralias, Lælio-Cattleyas, Oncidiums, Dendrobium Wardianum, Thunias, Phalænopsis, Brassias, Renanthera Imschootiana, and Cypripediums. The collection was awarded the 1st prize.

There was a better competition in the class for 12 Orchids in bloom, of distinct varieties. The finest plants were shown by Messrs. J. CYPHER AND SONS, and were comprised of Lælio-Cattleya Aphrodite with 14 blooms; L.-C. Canhamiana with 15 fine flowers; Cattleya Mendelii, C. Gaskelliana, C. gigas, Epidendrum prismatocarpum with 10 spikes; Thunia Marshallii, T. Veitchii, Oncidium crispum and O. macranthum; 2nd, Mr. W. P. BURKINSHAW, The West Hill, Hessle, whose best specimens were Lælia tenebrosa Walton Grange variety; Cœlogyne pandurata, Cattleya gigas, C. Mendelii and Lælio-Cattleya Canhamiana; 3rd, Mr. E. H. DAVISON, Twyford, Berkshire, with good specimens of Miltonia vexillaria, Cattleya Mossiæ Emperor, Lælio-Cattleya Excelsior (C. Mendelii × L.-C. Canhamiana), and Odontoglossum Jasper.

The best six Orchids in blooms were exhibited by Messrs. J. CYPHER AND SONS, outstanding plants being Oncidium Marshallianum, Lælia tenebrosa, and Vanda teres; 2nd, Mr. BURKINSHAW, who had well-grown plants of Cattleya gigas and Lælio-Cattleya Lady Miller; 3rd, Mr. E. H. DAVIDSON, who excelled in the class for three Orchids in bloom, distinct.

Mr. BURKINSHAW had the best single plant of an Orchid, showing a fine Cattleya Mossiæ alba. Mr. BURKINSHAW also won the 1st prizes in the two classes open only to amateurs, for six Orchids and three Orchids respectively.

Sweet Peas.

A class for 18 bunches of Sweet Peas was open to members of the trade only. Three competed, and the 1st prize was won by Messrs. S. BIDE AND SONS, Farnham, Surrey, who showed excellent spikes of Barbara (salmon), Etta Dyke (white), Premier (red self), R. F. Felton, May Campbell, Queen of Norway, Elsie Herbert and Flora Norton. 2nd, Messrs. E. W. KING AND CO., Coggeshall, Essex. 3rd, Miss HEMUS

Hardy Flowers.

Exhibits of hardy flowers were never shown finer than at the present time, and those at York are always equal to the best staged anywhere. The schedule included a class for a collection arranged in a natural manner in a space not exceeding 300 square feet. This was a splendid class, and, judged by the quality and variety of the flowers, no fault could be found with the judge's decision in awarding the 1st prize to Messrs. HARKNESS AND SONS, Bedale. But, at the risk of being considered hypercritical, we may find fault with the too flat appearance, for the flowers sloped from the back with a severe regularity in height; it needed only a few vases of loose sprays here and there, of varying height, to break the formality. As we overheard a visitor remark, it was too "beddified." But when we speak of the quality of the Poppies, which were magnificent; Gladioli brenchleyensis, Lupins, Liliums, Irises, Geraniums, Pyrethrums, Pæonies, Anchusas and the like, we have nothing to offer but the highest encomiums. The 2nd prize was awarded to Messrs. W. ARTINDALE & SONS for an arrangement enclosed with hedge of Cupressus, and with a pathway leading around a border back and front. The Pæonies and Eremuri in this exhibit were especially good. 3rd, Messrs. J. BACKHOUSE AND SONS, LTD., who also showed an enclosed garden with a pathway around it, replete with a wealth of beautiful flowers in season.

Fruit.

Substantial prizes, amounting in all to £21, were offered for a decorated table of ripe fruit measuring 10 feet by 4 feet 6 inches, but only one exhibit was forthcoming, and it was only a moderate display, staged by Mr. JAMES SUNLEY, South Milford. None of the dishes was named, and the judges only awarded the 4th prize.

There were also only two competitors in the class for a collection of 10 kinds of fruit. The 1st prize was won by JOHN BRENNAN, Esq., Baldersley Park, Thirsk (gr. Mr. Jas. E. Hathaway). Peaches Royal George, Violet Hative Nectarines, Jordans No. II. Melon and Brown Turkey Figs were all excellent. The Grapes of Black Hamburgh variety were much superior to those of Muscat of Alexandria.

The 2nd prize was awarded to Lord LONDESBOROUGH, Market Weighton (gr. Mr. J. C. McPherson). He had a dish of excellent Lord Napier Nectarines, good Royal George Peaches, a fine fruit of the Peer Melon and Elton Pine Cherries. The Grapes, both black and white, were only mediocre.

The positions of these two exhibitors were reversed in the class for a collection of four kinds. Lord LONDESBOROUGH'S Early Rivers Nectarines and Peregrine Peaches were of superb quality. The best Nectarines were shown by Col. HARRISON-BROADLY, M.P., Welton (gr. Mr. Chas. Lawton) (the variety was Lord Napier), and the best Peaches by Lord BELPER, Derby (gr. Mr. W. H. Cooke), who showed Hale's Early.

The exhibits of Grapes, taken as a whole, were not of surpassing quality. The best white variety was Chasselas Napoleon, shown by CHAS. THELLUSSON, Esq., Doncaster (gr. Mr. Fred Larner); and the best black variety, Black Hamburgh, exhibited by H. J. HOPE BARTON, Esq., Pontefract (gr. Mr. W. H. Dobson). In the Melon classes the prizes were awarded as follows:—*Scarlet flesh:* King George, shown by W. C. GRAY, Esq., West Hartlepool (gr. Mr. Thos. Pattison). *Green flesh:* Ringleader, shown by Lord LONDESBOROUGH.

Non-Competitive Exhibits.

Mr. J. WOOD, Boston, Lincolnshire, showed in his rockery exhibit how to arrange a rock-garden to produce a natural effect. As at the Chelsea Show he quite out-distanced all other builders of rockeries, their effects appearing garish in comparison. The old, weathered limestone employed in Mr. WOOD'S rockery gave an appearance of great age, which the builder had accentuated by arranging the boulders in just the right spots, making them appear as though washed by the rains of centuries. Only a few plants were used, but they were sufficient and of the right type. (Large Gold Medal.)

Messrs. SUTTON AND SONS, Reading, made a very imposing exhibit in a display of flowers and fruits. This collection of choice produce was staged most tastefully, every dish or vase being arranged in just the right manner to afford its full value. Gloxinias, Sweet Peas, Verbenas, Melons, Tomatos, Cauliflowers, Peas and Aubergines were all good. (Large Gold Medal.)

Messrs. THOMAS RIVERS AND SON, Sawbridgeworth, showed, on a raised platform, pot-trees with ripe fruits of Peaches, Nectarines, Figs, Apples, Cherries and Plums. May Duke and Guigne Annonay Cherries were fruiting splendidly. (Special Large Gold Medal.)

Messrs. JOHN PEED AND SONS, West Norwood, contributed an excellent exhibit of Anthuriums, Gloxinias, and Streptocarpuses, with a ground of Adiantum Ferns. (Gold Medal.)

Messrs. W. AND J. BROWN, Peterborough, put up a very large exhibit of Roses, also hardy flowers. Large sheaves of Lilium Szovitzianum were arranged at the back, the spikes of yellow flowers enhancing the brighter colours of the Roses. (Large Gold Medal.)

A large exhibit of Ferns was staged by Messrs. E. J. BATCHELOR AND SONS, Harrogate, principally varieties of Nephrolepis exaltata, including the newer N. e. compacta muscosa. (Gold Medal.)

Messrs. ED. WEBB AND SONS, Stourbridge, showed flowers, fruits and vegetables, representing the firm's specialities. The mounds of tuberous-rooted Begonias, Gloxinias, Verbenas and Petunias contained excellent specimens, and these were separated from a large central stand of vegetables and Melons by tables of Sweet Peas. (Large Gold Medal.)

Messrs. BLACKMORE AND LANGDON, Bath, were awarded a Large Gold Medal for tuberous-rooted Begonias. This magnificent exhibit was composed of such beautiful varieties as Mrs. J. Thornton (white), Rose Queen, Lady Tweedmouth (salmon), Mrs. Peter Blair (white), King Alfonso (scarlet), Princess Victoria Louise (salmon pink), and W. H. Bourne (scarlet).

Messrs. JAMES BACKHOUSE AND SON, LTD., York, showed an imposing floor group arranged as a bed of bright flowers and foliage with an edging of Lily of the Valley, dwarf Hydrangeas, Spiræas, and polyantha Roses. The main part of the group was composed of rambler Roses, Hydrangeas, Lilium longiflorum, and the double white Marguerite Mrs. F. K. Sander. (Large Gold Medal.)

Messrs. DOBBIE AND CO., Edinburgh, filled a large table with Sweet Peas, Antirrhinums, Violas and Collerette Dahlias. The tall spikes of yellow, orange, pink, purple and other beautiful Antirrhinums were in the centre of the Sweet Peas, which included the varieties Charles Foster, Mrs. McIlwrick, mauve and pink; Blue Picotee, Dobbie's Scarlet and Marks Tey, violet-maroon. (Large Gold Medal.)

Messrs. S. BIDE AND SONS, LTD., Farnham, Surrey, showed numerous varieties of Sweet Peas, flowers that lend themselves well for effective staging. (Silver-Gilt Medal.)

Messrs. E. W. KING AND CO., Coggeshall, Essex, were awarded a Gold Medal for a delightful exhibit of Sweet Peas.

Miss HEMUS, Upton-on-Severn, made a very beautiful exhibit with Iceland Poppies, Petunias and Sweet Peas. The last-named included the fine varieties Apple Blossom, White Pearl, Helen Lewis, Zarina, Primrose Paradise, Evelyn Hemus and Celestial, a fine shade of lavender. (Gold Medal.)

Messrs. YOUNG AND CO., Cheltenham, showed splendid blooms of perpetual-blooming Carnations, a large batch of the yellow Cecilia Improved forming the centre-piece, with the rich crimson Duchess of Devonshire variety in front. (Gold Medal.)

Mr. W. A. MANDA, St. Albans, showed hardy Cacti, a few specimen Cattleyas, and his new Fern—Polypodium Mandaianum. (Silver Medal.)

Mr. A. F. DUTTON, Iver, Buckinghamshire, showed Carnations in fancy wicker-baskets and ornamental vases, the exhibit being one of the most charming for effect in the show. (Gold Medal.)

Messrs. MANSELL AND HATCHER, Rawdon, Leeds, had the finest group of Orchids, being the best we have seen at these shows. It was an artistically-arranged group, in which each plant showed to advantage. Especially good were Lælio-Cattleya Canhamiana alba, Odontoglossum crispum, Cypripedium bellatulum and Miltonia vexillaria. (Large Gold Medal.)

A good exhibit of Orchids was shown by Messrs. CHARLESWORTH AND CO., Haywards Heath, for which a Gold Medal was awarded

Messrs. SANDER AND SONS, St. Albans, also showed Orchids. (Large Silver Gilt Medal.)

Mr. GEO. PRINCE, Oxford, showed Roses. (Silver Medal.)

Messrs. SEAGRAVE AND CO., Sheffield, were awarded a Silver Medal for Pelargoniums and Violas.

ROBERT SYDENHAM, LTD., Birmingham, displayed Sweet Peas in rustic metal-work holders. (Silver Medal.)

Messrs. S. BROADHEAD AND SON, Huddersfield, exhibited a large rockery. (Silver-Gilt Medal.)

Mr. C. E. SIMPSON, York, showed fruits, flowers, and vegetables. (Gold Medal.)

Messrs. GUNN AND SONS, Olton, furnished a large oval bed with varieties of border Phloxes and edged with Viola gracilis. (Gold Medal.)

Messrs. W. ARTINDALE AND SON, Sheffield, showed 80 varieties of Violas, with a front row of vases of Sweet Peas. (Gold Medal.)

Messrs. GODFREY AND SON, Exmouth, showed bunches of Pæonies, Campanula calycanthema, Solanum Wendlandii, as small pot plants, well flowered; Zonal-leaved Pelargoniums, Gaillardias, and other flowers. (Silver-Gilt Medal.)

Messrs. R. H. BATH, LTD., Wisbech, showed a great bank of beautiful Pæonies, with tall epergnes of Carnations, Sweet Peas, Delphiniums and Antirrhinums at the back, and a front row of Sweet Peas and Carnations. (Gold Medal.)

Messrs. KENT AND BRYDON, Darlington, exhibited a large group of variegated and flowering trees and shrubs, Roses, Hydrangeas, with batches of hardy flowers on the outskirts. This group was backed by a rockery arranged by the same firm, in which hardy Cypripediums were conspicuous objects. (Large Gold Medal.)

Messrs. DICKSONS, Chester, had a large collection of showy border flowers, with baskets of rare Primulas, and pot plants of Astilbe Ceres, with pink plumes. (Gold Medal.)

Mr. G. YELD, 2, Burton Lane, York, showed hybrid Irises and Hemerocallis. H. tangerine has clear apricot-yellow petals free from spotting. (Silver-Gilt Medal.)

Messrs. KELWAY AND SON, Langport, Somersetshire, filled a large space with Pæonies, Delphiniums and Gaillardias, the group presenting a showy bank of bright flowers. This firm also showed varieties of Radishes. (Gold Medal.)

Mr. W. J. UNWIN, Histon, was awarded a Gold Medal for a collection of Sweet Peas.

Exhibits of hardy flowers were staged by Messrs. G. LONGSTER AND SONS, Malton (Silver Medal); Mr. W. LAWRENSON, Newcastle-on-Tyne, who also showed Sweet Peas (Gold Medal); Messrs. JARMAN AND CO., Chard (Silver Medal); Mr. G. W. MILLER, Wisbech (Silver Medal); and Mr. W. R. TRANMER, Cottingham, Hull (Silver Medal).

THE WEATHER.

THE WEATHER IN WEST HERTS.

Week ending June 18.

Two very warm days.—The first two days were of moderate temperature, but since then the weather has been warm, and for the last few days very warm even for the middle of June. On the two warmest days the highest temperature in the thermometer screen rose respectively to 83° and 81°. These were the two warmest days as yet of the present year. The nights have been, however, only moderately warm for the time of year; in fact, on one night the exposed thermometer fell to within 6° of the freezing point. The ground temperatures have risen rather rapidly during the week, and are at the present time 2° warmer at 2 feet deep, and 3° warmer at 1 foot deep, than is seasonable, An insignificant amount of rain fell in the afternoon of the 17th, otherwise there has been no rain at all for nine days. This dryness is evidenced by the soil gauges, through which there has been no percolation at all for eight days. The sun shone on an average for 7½ hours a day, or for 1½ hours a day longer than is usual in the middle of June. On one day the sun shone for 14 hours, which is a high record for June, although not very exceptional. Light airs, as a rule, prevailed, and for 87 consecutive hours came from the east. The mean amount of moisture in the air at 3 p.m. fell short of a seasonable quantity for that hour by 8 per cent. *E. M., Berkhamsted, June 18, 1913.*

GARDENING APPOINTMENTS.

Mr. F. W. NORRIS, previously of Tehidy, Mabledon, Colebrooke and Havering Parks, as Gardener to the Right Hon. the EARL OF MORLEY, Whiteway, Chudleigh, Devon.

Mr. T. PUGH, for the past 5 years General Foreman at Macallwch Castle Gardens, Glasbury, and formerly at Tempsford Hall, The Wilderness, etc., as Gardener to HERBERT GRAYSTONE, Esq., The Moor, Hay, Hereford.

Mr. A. J. GREEN, for the past 18 months Gardener and Industrial Trainer at the Children's Homes, Chipping Ongar, Essex, as Gardener and Industrial Trainer at the District Schools, Wigmore, West Bromwich.

Mr. J. M. DEDMAN, for the past 3 years Gardener to F. BIRTWHISTLE Esq., Hollowforth House, Broughton, Preston, as Gardener to the Right Hon. LORD ROCHDALE, Beechwood, Rochdale, Lancashire.

Mr. A. FLETCHER, for the past 5 years Gardener at Hardale, West Hartlepool Durham, as Gardener to H. S. STAVELEY HILL, Esq., M.P., Oxley Manor, Wolverhampton. [Thanks for 1s. 6d. for R.G.O.F. ex.—EDS.]

MARKETS.

COVENT GARDEN, June 18.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general averages for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—EDS.]

Cut Flowers, &c.: Average Wholesale Prices.

	s.d.	s.d.
Carnations, per dozen blooms, best American varieties	1 0	1 6
— smaller, per doz. bunches	9 0	12 0
— Carola (crimson), extra large	2 0	2 6
— Malmaison, p. doz. blooms:		
— — pink	4 0	6 0
Cornflower, blue, per doz. bunches	0 9	1 3
— pink	1 0	1 3
— white	1 6	
Eucharis, per doz.	2 6	—
Gardenias, per box of 15 and 18 blooms	1 6	4 0
Gladiola, Akerman	6 0	8 0
— The Bride	4 0	6 0
— Blushing Bride	4 0	6 0
— Ne Plus Ultra, per doz. spikes	0 9	1 0
— Peach Blossom	6 0	8 0
Gypsophila, white	2 6	3 0
— pink	3 0	4 0
Iceland Poppies, per dozen bunches	1 0	1 6
Iris, Spanish, per dozen bunches	5 0	7 0
Lilium auratum, per bunch	4 0	4 6
— longiflorum, per doz., long	1 0	1 3
— — short	1 0	1 3
— lancifolium album, long	2 6	—
— — short	2 6	3 0
— speciosum		
— rubrum, per doz., long	1 6	2 0
short	1 0	1 3
— candidum, per bunch, long	1 3	1 6
per doz. short	1 0	1 3
Lily of the Valley, per dozen bunches:		
— extra special	12 0	15 0
— special	10 0	12 0
— ordinary	8 0	9 0
Mignonette, per doz. bunches	5 0	6 0
Nigella (Love in a Mist), per doz. bunches	1 6	2 0
Orchids, Cattleya, per doz.	9 0	10 0
— Cypripedium	3 0	—
— Odontoglossum crispum	2 0	3 0
Pæonies, per doz. bunches of 6 blooms	4 0	6 0
Pancratiums, per doz.	2 0	2 6
Pelargoniums per dz. bunches white	3 0	4 0
double scarlet	6 0	8 0
Pinks: white, Her Majesty, per doz. bunches	1 6	2 0
Roses: Caroline Testout	1 6	2 0
— Catherine Mermet	1 0	1 6
— CountessDerby	2 6	3 6
— Frau Karl Druschki	2 0	3 0
— Général Jacqueminot	0 9	1 0
— Innocence	2 0	2 6
— Joseph Lowe	1 6	2 0
— Kaiserine	1 6	3 0
— Lady Hillingdon	1 0	1 6
— Liberty	0 9	2 0
— Madame A. Chatenay	1 3	2 6
— Maryland	0 9	1 0
— Niphetos	1 0	1 6
— President Carnot	2 0	2 6
— Prince de Bulgaria	3 0	4 0
— Richmond	1 0	2 6
— Rose Queen	3 0	4 0
— Sunburst	1 3	2 6
— Sunrise	0 9	1 0
— W. A. Richardson	1 0	1 6
Spiræa, per doz. bunches	5 0	6 0
Stephanotis, per 72 spray	1 3	1 6
Sweet Peas, per dozen bunches:		
— white	2 0	3 0
— coloured	2 0	3 0
Stock, double white, per doz. bunches	4 0	6 0
Tuberoses, per gross	6 0	8 0

Cut Foliage, &c.: Average Wholesale Prices.

	s.d.	s.d.
Adiantum Fern (Maidenhair), best, per doz. bunches	3 0	4 0
Agrostis (Fairy Grass), per doz. bunches	2 0	4 0
Asparagus plumosus, long trails, pr. ½doz.	1 6	2 0
— medium, doz. bunches	12 0	18 0
— Sprengeri	10 0	12 0
Carnation foliage, doz. bunches	3 0	—
Croton foliage, various, dz. bnchs.	12 0	15 0
Cycas leaves, artificial, per doz.	3 0	12 0
Eulalia japonica, per bunch	1 0	1 6
Moss, gross bunches	6 0	—
Myrtle, doz. bnchs. (English), small-leaved	6 0	—
— French	1 0	—
Smilax, per bunch of 6 trails	1 0	1 3

Plants in Pots, &c.: Average Wholesale Prices.

	s.d.	s.d.
Aralia Sieboldii, dozen	6 0	7 0
Araucaria excelsa, per dozen	18 0	21 0
Asparagus plumosus nanus, per dozen	10 0	12 0
— Sprengeri	8 0	9 0
Aspidistra, p. dz., green	21 0	30 0
— variegated	30 0	60 0
Cacti, various per tray of 15's	4 0	—
— various, per tray of 12's	5 0	—
Cinerarias, p. doz.	8 0	9 0
Cocos Weddeliana, per dozen, 60's	6 0	12 0
— larger, each	2 6	10 6
Croton, per dozen	18 0	30 0
Cyperus alternifolius, p. doz.	5 0	6 0
— laxus, per doz.	4 0	5 0
Dracæna, green per dozen	10 0	12 0
Ferns, in thumbs, per 100	8 0	12 0
— in small and large 60's	12 0	20 0
in 48's, per doz.	6 0	—
Ferns:		
— choicer sorts, per doz.	8 0	12 0
— in 32's per doz.	10 0	18 0
Ficus elastica, per dozen	9 0	12 0
Fuchsias	7 0	9 0
Crassulas, per doz. 48's	12 0	18 0
Geonoma gracilis, 60's per dozen	6 0	8 0
— larger, each	2 6	7 6
Heliotrope	7 0	8 0

Plants in Pots, &c.: Average Wholesale Prices (cont.)

	s.d.	s.d.
Hydrangea Paniculata, per doz.	24 0	30 0
Hydrangeas, pink	9 0	15 0
— blue	12 0	30 0
Kentia Belmoreana, per dozen	5 0	42 0
— Fosteriana, 60's, per dozen	4 0	6 0
— — larger, per dozen	18 0	63 0
Latania borbonica, per dozen	12 0	30 0
Lilium lancifolium rubrum per dz.	15 0	18 0
Lilium lancifolium alba, dozen	18 0	21 0
Lilium longiflorum per dozen	10 0	15 0
Lily of the Valley	18 0	21 0
— 48's, per doz.	21 0	30 0
Marguerites, in 48's per doz., white	6 0	10 0
Mignonette	7 0	8 0
Pandanus Veitchii, per dozen	36 0	48 0
Pelargonium	10 0	12 0
Pelargonium (Geranium), double scarlet, 48's	4 0	5 0
— other varieties	5 0	6 0
— — 48's various	4 0	6 0
— — 60's various	2 0	2 6
— — Ivy-leaved	6 0	10 0
Phœnix rupicola, each	2 6	21 0
Rambler Roses, ea.	6 0	15 0
Saxifraga pyramidalis	15 0	18 0
Spiræa japonica, per dozen pots	6 0	8 0
— pink	10 0	12 0
Stocks, all colours	8 0	10 0
Verbena Miss Willmott, 48's, per dozen	5 0	6 0
Verbenas, King of Blues, per doz. 48's	6 0	8 0

French Flowers: Average Wholesale Prices.

	s.d.	s.d.
Marguerite, yellow, per dozen bunches	1 9	2 0
Statice, mauve	3 0	4 0

Fruit: Average Wholesale Prices.

	s.d.	s.d.
Apples, Australian and Tasmanian		
— Australian case	14 0	17 0
— Cooking varieties, per case	14 6	15 6
— Cox's Orange Pippin, cases	20 0	25 0
Apricots, per box	1 6	4 6
— ½ sieve	10 0	12 0
Bananas, bunch:		
— Doubles	8 6	11 0
— No. 1	7 0	8 0
— Extra	9 0	10 0
— Giant	12 0	14 0
— Loose, p. doz.	0 6	1 6
— Red coloured	4 6	5 6
— Jamaica, pr ton	£9	£12
— Jamaica Ordinary, per box (9 doz.)	5 0	5 6
Cherries, English, per peck	3 0	6 0
— English ½ bushl	6 0	12 0
— French, per ½ bushel	13 0	15 0
— per strike	10 6	12 6
— per Boxes	2 0	3 6
Cranberries, p. case	9 0	9 6
Currants, Black, ½ sieve	9 0	—
— Red, ½ sieve	9 6	—
Dates, per dozen	2 9	3 0
— Egyptian, cwt.	25 0	—
Gooseberries, per ½ bushel	3 0	4 0
— per peck	2 0	2 6
Green Figs	1 6	8 0
Grape Fruit, case: — 96's, 80's, 64's, 54's	16 0	22 0
Grapes:		
— Australian, per case	26 0	33 0
— English:—		
— Black Hamburgh, per. lb.	1 6	3 0
Canon Hall Muscat	4 0	7 0
— Muscat of Alexandria	4 0	7 0
Limes, per case	5 0	6 0
Lemons, Messina, per case	11 6	26 6
Naples, p. case	17 0	30 0
Mangoes, Cape, dz.	6 0	8 0
Melons English, each	1 3	3 0
— Guernsey	1 3	2 6
French Canteloupe melons, each	3 6	12 0
Nectarines, doz.	4 0	24 0
— Belgian	4 0	12 0
Nuts, Almonds, bag	52 6	—
— Brazils, cwt.	54 0	62 0
— Spanish, sack	40 0	42 0
— Barcelona, bag	35 0	36 0
— Cocoanuts, 100	18 0	23 0
— English Cobs, per lb.	0 3	0 4
— Chestnuts, bg.	14 0	26 0
— Walnuts, French, p. cwt.		
— Naples, p. cwt.	64 0	—
Oranges:		
— Seville, sours, case	18 0	20 0
— Messina, bitters, case	8 0	9 6
— Jaffa, per case	8 6	9 0
— Murcia	25 0	44 0
— Denia, per case	6 0	45 0
— Palermo Blood	9 0	10 0
Peaches, English, dozen	4 0	21 0
— Belgian, dozen	4 0	12 0
Pears:		
— Tasmanian, case	10 0	12 0
— per bundle of 3 boxes	15 0	20 0
Pineapples, St. Michael	3 6	4 6
Plums, French strike	4 6	—
Strawberries:		
— Southampton basket, chip	1 0	1 6
— Pecks	2 6	4 0
— Punnets, p doz.	4 0	6 0

Vegetables: Average Wholesale Prices.

	s.d.	s.d.
Asparagus, English special quality, per bundle	3 0	6 6
— English, per bundle	1 0	1 6
— ½ bundles	0 5	0 6
— Sprue, bundle	0 3	0 6
Artichokes (Globe), per dozen	1 6	2 0
Batavia, per doz.	2 0	—
Beans:		
— Guernsey, lb.	1 0	1 3
— English, per lb.	1 0	1 3
— French, brd. pad	3 6	4 0
— English broad per bushel	2 6	2 6
Beetroot, p. bshel.	2 6	3 0
— bags	4 6	5 0
Cabbages, p. tally	2 0	3 0
Carrots (English) pr. doz. bun.	2 6	3 0
— French, dozen Round	8 0	9 0
— Long unwashed, per bag	6 0	8 0
Cauliflowers, per doz.	2 0	2 6
Celeriac:	2 6	4 0
— French, p. doz.	4 0	4 6
Chicory, per lb.	0 3	0 4
Cucumbers, per dozen	3 6	4 6
Endive per dozen	2 0	2 6
— French, p. doz.	2 0	2 6
Greens, per bag	1 0	3
Garlic strke	2 6	—
Horseradish, 12 bundles	10 0	12 0
Leeks, per doz.	2 0	2 6
Lettuce, French Cos per dozen	4 0	5 0
— English Cos, per doz.	0 9	1 0
Lettuce English round, p. doz	0 6	1 0
— Dutch, per doz	10	1 0
Marrows dozen	6	8 0
Mint, per doz. bunches	3 0	5 0
Mushrooms, cultivated, per lb	0 6	1 0
— Broiled	0 4	0 6
— Outdoor per lb.	0 3	0 6
Mustard and Cress, per doz	0 10	1 0
Onions, pickling, ½ bushel	2 6	3 0
— per bushel	5 0	7 0
— English, bag	4 0	4 6

Vegetables: Average Wholesale Prices (cont.)

	s.d.	s.d.		s.d.	s.d.
Peas, English, p. lb.	1 0-	1 3	Tomatos, English, per dozen lbs.	5 0-	6 0
— White, per bushel	3 0-	4 0	— Seconds, per dozen lbs. ...	1 6-	2 0
— Blue, per bushl.	4 0-	6 0	— Guernsey, per dozen lbs. ...	3 0-	5 0
— bags	6 0-	10 0	Thyme, per dozen bunches ...	1 6-	2 0
— French, pad of 10 lb.	5 0-	6 0	Turnips (English), per dozen bunches ...	2 0-	3 0
— Guernsey, p.lb.	1 0-	1 3	— bags	3 0	—
Parsley, per doz. bunches ...	2 0-	3 0	— French, new, dozen bunches	7 0-	8 0
Radishes (French), per dozen ...	1 6-	2 0	— unwashed, bag	2 0-	3 6
— English, p. doz.	10-	1 3	Watercress:		
— Guernsey ...	0 9-	1 0	— dozen	0 5-	0 6
Sage, per dozen ...	2 0	—			
Spinach, p. bushel	1 6-	2 0			

REMARKS.—Quantities of Australian Apples will now be limited. There has been a good supply of Grapes during the past week, including the varieties Black Hamburgh, Black Alicante, Muscat of Alexandria, and Canon Hall Muscat. A few cases of Australian Grapes are still obtainable. The supplies of Peaches and Nectarines have increased considerably. Melons and Figs continue to be plentiful. There is a good supply of Strawberries from Southampton and Kent, considering the dry state of the weather. They are packed in punnetts, chips and pecks. Varieties of Kent Cherries, including River's Early, Governor Wood and Black Circassian, are now obtainable. Continental varieties include Ox Heart, Biggareau and May Duke. Other Continental fruits consist of Red and Black Currants, Apricots and Plums. Tomatos have a good trade, and Asparagus is plentiful. Marrows, Cucumbers and all other seasonable Vegetables are fairly plentiful.—*E. H. Rides, Covent Garden, June* 18, 1913.

Potatos.

	s.d.	s.d.		s.d.	s.d.
German, per bag...	5 0-	6 6	Dunbar, per bag...	7 6-	8 0

New Potatos.

	s. d.	s. d		s. d.	s. d.
Cherbourg, p.cwt.	7 6-	8 0	St. Malo, per cwt.	8 3-	9 0
Jersey ,,	9 0-	9 6			
Lisbon, per case	4 6-	5 0	Teneriffe ,,	7 0-	9 0

REMARKS.—There are still a few old Potatos on hand which are making good prices, but are expected to finish at the end of next week. The prices for New Potatos are much lower, and there is a fairly good demand for them.—*Edward J. Newborn, Covent Garden and St. Pancras, June* 18, 1913.

TRADE NOTE.

CHANGE OF ADDRESS.

Messrs. DICKSON, BROWN AND TAIT, 43 and 45, Corporation Street, Manchester, are transferring their order trade to the warehouse, 35, 37 and 39, Dutton Street, Manchester, as from the 24th inst. The head office will be at 57, Cross Street.

Obituary.

CHARLES ERNEST PILLING.—The news of the death of this gentleman, which occurred with tragic suddenness on Monday, the 9th inst., will be learned with regret, and especially by East Anglian Horticulturists, to whom he was well known as the honorary secretary of the Norfolk and Norwich Horticultural Society. Mr. Pilling was a solicitor by profession, but was keenly interested in Horticulture, and under his guidance the local society has been able to regain, in a large measure, the position of financial stability which it enjoyed for many years. The last work he did was to complete the arrangement for the forthcoming Rose Show on June 25 and 26. A keen lawn tennis player, he took part in this game on June 9 at a neighbouring parsonage, and whilst sitting in the garden engaged in conversation with a lady he was noticed to fall back in a faint, and although medical aid was immediately at hand it was found that he had passed away. He was laid to rest on Thursday, the 12th, in the picturesque cemetery of Wymondham, in the presence of a numerous company of friends.

JAMES FRASER.—The death of Mr. James Fraser, Superintendent of the Mountain Home Cemetery, Kalamazoo, Michigan, U.S.A., is recorded in *Horticulture*. Mr. Fraser, who was born in London in 1862, settled with his parents in America in 1870.

WILLIAM EWING, SEN. — *Horticulture* also records the death of Mr. William Ewing, of the firm of William Ewing and Co., Montreal. Mr. Ewing received his early training in Glasgow.

H. T. W. WINFIELD.—The death of Mr. Henry T. Wellington Winfield, florist, which took place at his home in Bedford Avenue, Brooklyn, U.S.A., May 24, is recorded in the *American Florist*. Mr. Winfield, who was sixty-five years of age, was born in Oxford. He conducted a florist's business in Brooklyn for a period of twenty-five years.

Answers to Correspondents.

BALSAM PINE: *F. Gould.* Amongst the many Conifers referred to in American publications no mention is made of Balsam Pine, and it is probable that the tree you refer to is one of the Balsam Firs which are of American origin. The terms Pine and Fir are often loosely applied, as in the case of our common Pinus sylvestris, which is called Scots Fir and Scots Pine, and, as the various species of Abies or Firs were included by one author in the genus Pinus, it is quite likely that the name of Balsam Pine has been wrongly applied and that it ought to read Balsam Fir. The true Balsam Fir is Abies balsamea, a native of North-eastern America. In the most satisfactory conditions in that country it forms a moderate-sized tree, 50 or 60 feet high, with a trunk 2 feet or so in diameter. It seldom grows well in this country, and is not suitable for planting for commercial purposes. Even in America the timber is regarded as practically worthless for building purposes. The wood has been used to some extent for the making of pulp. The same remarks apply to the Southern Balsam Fir, A. Fraseri. There are three Firs from Western North America which are sometimes called White Balsam Firs, and these are more suitable for planting in the British Isles. They are A. lasiocarpa, A. concolor and A. grandis. All grow freely under favourable conditions and form timber fairly rapidly. The wood is not of first-rate quality, however, and is put to the commoner uses in America, such as box-making and coopery. The wood of A. concolor is employed for making butter-tubs and butter-boxes on account of its non-odorous qualities. These Firs thrive satisfactorily in a moist climate, and A. grandis in particular is making good growth in the Highlands of Scotland at altitudes varying from 500 to 1,200 feet. The three last-named species may be obtained as two or three-year-old plants from any of the nurserymen who deal in forest trees. It is probable, however, that if you wish to form a plantation you would do better to choose some other tree. If you can obtain a specimen of Balsam Pine we shall be pleased to determine the species.

BIGNONIA AND WISTARIA: *E. F.* The Bignonia root is dead, but no special cause can be assigned. Wistarias often fail in the manner described, but the cause is unknown.

CAPSICUM: *Capsicum.* The largest capsicum with which we are acquainted is obtained from a true strain of Mammoth Long Red. There may be Continental or American varieties larger than this, but possibly the climate has much to do with the size they attain.

GOOSEBERRY BUSHES DISEASED: *W. H. L.* The Gooseberries are injured by the Gooseberry leaf cluster-cups fungus (Puccinia pringsheimiana), a disease which does not generally appear in sufficient quantity to do harm. Plants of Sedges growing near to the Gooseberry bushes should be destroyed.

GRAPE MUSCAT OF ALEXANDRIA: *Glen.* The bunches were imperfectly fertilised. When in flower the stem of each bunch should be tapped gently during the forepart of each day after the pollen has become sufficiently dry to be seen floating in little, dustlike clouds. Tapping generally has the desired effect, but if you wish to make doubly sure stroke each bunch with a soft camel's hair brush or a rabbit's tail. To destroy thrips fumigate the vinery with a nicotine preparation when the berries have become a little harder, say one month from the date of the vine's flowering.

GRAPE VINE: *W. F. W.* Red spider is the trouble. Spray with a solution of liver of sulphur, using 1oz. in 3 gallons of water.

GRAPES: *Vine Expert*: There is no disease present, but the injury they show is probably caused by too much forcing in the way of liquid manure.

LILY BULB: *Lilies.* We cannot determine the cause from such a small specimen. If you will send better material we will do our best to ascertain the injury.

MELONS: *R. H. N.* There is no disease present. The foliage is very soft, and requires shading to prevent undue transpiration. Water twice at intervals of three days with a solution of sulphate of ammonia at the strength of 1oz. to 2 gallons of water.

NAMES OF PLANTS: *J. B.* 1, Asphodeline lutea; 2, Lychnis dioica flore pleno.—*T. H. G.* 1, Festuca ovina; 2, F. duriuscula.—*T. L.* Saxifraga sp., probably S. sarmentosa; specimen very poor.—*E. B., Horton.* 1, Syringa Emodii; 2, Prunus lusitanica (Portugal Laurel); 3, Lonicera involucrata.—*A. B. H.*, 1, Viburnum lantana; 2, Cornus sanguinea; 3, Ligustrum vulgare var. aurea.—*No Name.* Hyoscyamus niger (Henbane). — *Foreman.* 1, Trichopilia laxa; 2, Cochlioda rosea; 3, Odontoglossum Lindleyanum; 4, Pleurothallis lateritia; 5, Odontoglossum blandum. —*K.* 1, Sisyrinchium Bermudianum; 2, Linaria Cymbalaria. — *W. and S.* Festuca Myuros.

OILSKIN COAT: *K. H. B.* As the coat has started to wear it is improbable that fresh dressings of linseed oil will make it impervious to rains. Your best plan is to make of it a painted coat, such as is used largely by boatmen. The wives of the boatmen make the coats of stout, unbleached calico. The garment is oiled and afterwards painted black. They place a spar through both arms, and whilst the coat is thus suspended dress it with one or more coatings of a black paint made from white lead. Such coats are perfectly weather-proof.

PEACH LEAVES DISEASED: *A. J. M.* Peach leaf-curl is affecting the Peaches. As the mycelium of the fungus persists from year to year in the diseased shoots, the most certain method of getting rid of the disease is to cut off the shoots just behind the infected portion.

PEAS: *Altadove.* We have failed to find any parasitic disease. The injury is similar to one described often due to watering in sunshine.

POTATOS: *T. H. C.* The plants are attacked by the winter rot fungus, which was in the tubers at the time of planting.

RASPBERRY CANES: *Newmarket.* The Raspberry spot caused by the fungus Gloeosporium venetum is responsible for the injury. Remove the diseased canes and spray the others with liver of sulphur. In the winter, spray them again thoroughly with sulphate of iron, using 1lb. in 25 gallons of water.

ROSE LEAVES CURLED: *C. H. W.* The injury is caused by the leaf-rolling Sawfly. Pick off the rolled leaves and spray the plants with nicotine wash or tobacco water.

STOCKS, ASTERS AND CALCEOLARIAS: *A. J. M.* Black stem-rot of Asters, etc., is due to a fungus in the soil, which should be sterilised before the seed is sown, as the disease only attacks plants in the seedling stage.

TOMATOS.—*J. L.* There is no fungus disease present. The appearance is due to improper treatment.

Communications Received.—J. H B—D O.—Quarterian—H. and Sons—W. J. W.—C. T.—W. T T—W. E., Lamberhurst—Head—G. D—H. F. M B—F. M., Nice—W. E. B.—T. P. E. and Bros.—P. P., Berlin—G. S—W. M.—M. M.—B.—Athy—E. H. W.—T. H.—T. L.—H. C., Geneva—G. H. H. W.—J. L.—S. A.

THE
Gardeners' Chronicle

No 1383—SATURDAY, JUNE 28, 1913.

CONTENTS.

Amaryllis Belladonna blanda 440
Benevolent Institution, Gardeners' Royal ... 439
Birds in fruit nets ... 441
Cannell, Mr. Henry ... 440
Carnarvonshire farm school, Madryn Castle 440
Davenham Gardens, Malvern 441
Elm, curious behaviour of an 441
Fruit prospects in Kent 434
Grapes, colour and bloom of 433
Ghent summer show, the 439
Grenfell, Lord, as a gardener 438
Helichrysum bellidioides 436
Holland House Show ... 440
Hortensias, blue-flowered 441
Imperia Business Association 440
Kearsney Court, Kent 438
Laburnum with three kinds of flowers ... 441
Mutation in micro-organisms 438
Obituary—
Caspell, George ... 444
Wilde, Thomas ... 444
Orchid notes and gleanings 435
Puccinia malvacearum, Hollyhock disease ... 441
Regent's Park 440
Saxifraga longifolia ... 441
Scotland, notes from—
Fruit prospects in North Scotland ... 436
Seedsmen at cricket ... 439
Shanghai, a flower show at... 435
Societies—
Birmingham Botanical and Horticultural... 443
Horticultural Club 439, 442
National Gladiolus ... 443
Royal Horticultural 442
Vaughan, Mr. J. C. ... 439
"Vegetable Teratology." interesting letter by Dr. Masters concerning 439
Veitch, Sir Harry, retirement of 439
Week's work, the—
Flower garden, the... 436
Fruits under glass ... 437
Hardy fruit garden, the 437
Kitchen garden, the ... 437
Orchid houses, the ... 436
Plants under glass ... 437
Will, belated discovery of a gardener's ... 439

ILLUSTRATIONS.

Amaryllis Belladonna blanda 441
Gardener's house at Catsworth 439
Helichrysum bellidioides growing on a rockery 436
Kearsney Court, Kent, view of the gardens at (Supplementary Illustration).
Shanghai flower show. The "cherry-blossom" dance at a 435

COLOUR AND BLOOM OF GRAPES

TO some extent colour and bloom of grapes depend on soil constituents, but they also depend in a great measure on atmospheric conditions and the healthiness and amount of the foliage. Without the natural colour, whether it should be amber, black, red, or green, no fruit ever has perfect flavour. True, it may be sweet, and that counts as flavour with some people, but it does not satisfy the palate of the connoisseur, any more than certain kinds of wine without bouquet. And without the wonderful, waterproof, wax-like covering called "bloom" the keeping qualities are not what they should be. If you dip a bunch of Grapes into clear, soft water, as I have frequently done to rid it of dust collected at an exhibition, the water, carrying the dirt with it, will run off every part of the berries where the bloom is perfect, providing there has been no sweating caused by great fluctuations of temperature. The water lingers on any portion where the surface has been rubbed, and, of course, with the natural changing atmospheric conditions of a vinery, you cannot always prevent water from condensing on such spots, and if it continues there for any lengthy period decay will set in. I have proved to my own satisfaction that when ripe Grapes are cut and their stems placed in water in closed vessels there is but little if any evaporation, and I think it follows that with perfect bloom there can be no taking in of moisture from without under such conditions, but it is possible that when the protective bloom is gone the case is altered. Therefore the density of the bloom is worth considering. In the early stages of growth, the bloom is easily damaged, not only by rubbing, but by syringing and by unsuitable atmospheric conditions, and the damage can never be repaired. Some growers make a practice of heavily damping their vineries when closing them in the afternoon. If the temperature rises rapidly, this will cause a sweating or condensation of moisture on all comparatively cold surfaces, including the berries. This reduces the density of the bloom, and although there may be a little increase in size, it is doubtful if there is any addition to the weight of the fruit, it is merely an enlargement of the cells without any corresponding filling up, such as would take place were transpiration by the leaves and consequently feeding by the roots not arrested. A liability to ultimate shrivelling of the fruit is thus created as well as a general falling off of quality. No one, excepting certain retailers of Apples, depreciates the beauty which bloom imparts to fruit, but I want to insist that it is there for a useful as well as for an ornamental purpose.

I have said that the moisture condenses on all cold surfaces when the house is closed and damped on a bright afternoon. This also includes the under surfaces of the leaves. In a natural state these under surfaces are not damped during the daytime excepting when there are great and rapid changes of temperature. The stomata are placed mostly in these under surfaces, where they are alike protected from too much wet as well as from dirt. Now, by gentle coaxing you may sometimes lead Nature slightly out of the ordinary rut, but she strongly resents direct opposition.

Till such time as the present order of things is reversed, and the rain comes upwards from the earth instead of downwards from the clouds, when the structure of the plants would, doubtless, be altered to suit the changed circumstances, I would advise that the under surfaces of leaves be not too frequently wetted, for transpiration is not the only function thus interfered with.

Black Hamburghs were generally coloured better forty or fifty years ago than they are to-day. The baskets of this variety that were shown year after year at the Regent's Park in the sixties by Mr. Henderson, of Cole Orton, Leicestershire, have not, in my opinion, ever been surpassed, though larger berries and larger bunches have been produced. Mr. Meredith showed some extremely large berries from a vine at the northern end of his house with an eastern aspect, and the bunches were large, from 5 to 8lb. in weight, but they had not the superb finish of those exhibited by Mr. Henderson, and in the one season that I took them to the show I was mortified to see grower's bunches of 1½ to 2lb. placed first, but I have no doubt now that they were judged correctly. I believe that those grapes were grown in an old-fashioned pit where the panes of glass were small and some of them missing. The principal difficulty in the present day in obtaining good finish with Black Hamburgh and other first-class black varieties, supposing the cultural details to be correct, is in keeping the temperature sufficiently low during hot, bright weather. There is so little obstruction to the sun's rays in our modern houses that, without shading it is impossible at times to prevent the temperature rising too high and too rapidly. Anything above 80° is detrimental to the perfect colouring of the variety mentioned, and also of Madresfield Court and Mrs. Pince. From the time that the first sign of colouring appears, therefore, it is recommended that shading from bright sunshine should be practised and abundance of air given early and through the hottest part of the day, and that no rise of temperature be allowed after closing. I have never found ventilation at night necessary, but it is very important to employ it in some degree before the temperature rises in the morning.

Healthy foliage is, of course, a necessity, because the material for the colouring and bloom as well as for the growth in size is prepared in that foliage, and to the leaves beyond the fruit is attributed the most important work in this respect.

I do not think it possible to have fruit perfectly finished without three or four good leaves, and I prefer four, beyond the bunch. These leaves should be kept not less than two inches from the glass and must not be overlapped by neighbouring leaves.

Four feet apart must be the minimum distance between the rods, and the trellis ought never to be less than two feet from the glass. If the house is light and the roof rather steep, a much greater distance from the glass may be allowed with advantage at the higher part, so long as there is a space of eight feet clear between the path and the trellis.

The colour of black grapes is in the skin, therefore the skin must be thick enough not to be transparent, and this you cannot have if there is a deficiency of potash or phosphorus in the border, and there must be just sufficient nitrogen to make these materials available, for they are of no use by themselves, and nitrogen is more likely to be exhausted than they are. On the other hand, an excess of nitrogen or that stimulant applied at the wrong time will prevent colouring, therefore it is necessary to have a sufficiency in the border before colouring commences.

During the ripening process the roots are most active, and the supply of water needed is greater than at any other time, and even when the fruit is ripe the border should not be allowed to become anything like dry, because there are not only the necessities of the current crop to be considered, but the future well-being of the vines. The ease with which they will start growing in the following season depends very largely on their treatment at this period. Colouring should commence simultaneously with the commencement of the second swelling, and ripening takes place after colouring is completed. Hamburghs take about four weeks to colour and six or seven weeks, according to the size of the berries, to ripen from the time they show the first tinge. If they become really black in four weeks they retain that colour; but if there is the slightest tinge of red at that time they will go back instead of forward. Alnwick Seedling colours in a fortnight or not at all. Gros Colmar, if well cultivated, will sometimes continue to colour till the middle of November, but how seldom we see this noble Grape perfectly grown. It is possible to have it after Christmas nearly as good as Black Hamburgh, instead of the foxy-coloured, sweetened earth and water flavour which prevails. White Muscats and other late white varieties, as well as most of the late black Grapes, will bear much more heat during ripening than that recommended for Hamburghs, providing the leaves remain healthy, but the temperature must be lowered as soon as they are ripe, merely keeping sufficient warmth to prevent damp settling on the fruit. *W. Taylor.*

INSPECTION OF FRUIT DISTRICTS.

Special Report by "*SOUTHERN GROWER.*"

II.—THREE KENT DISTRICTS.

THE greater part of the time at the disposal of my companion and myself was devoted to Kent, as being by far the most important fruit-growing county. Apart from the cider and perry counties there is no county which approaches Kent for acreage of Apples or Pears. One-twelfth of the area under Apples in England is in Kent, over one-tenth of the area under Pears, much more than half that under Cherries, over one-fifth of that under Plums, more than one-fourth of that under mixed orchard fruits, nearly one-third of the Strawberry acreage, over that proportion of the Raspberry plantations, nearly as large a proportion of the Currants and Gooseberries, and not far short of one-third of the total area under mixed small fruit.

At the outset of our journeying we were warned that we should not find much fruit in Kent, and, generally speaking, we found this statement was accurate, although it did not apply to every orchard visited or seen from the roadside. So far as the Plum crop is concerned the three districts of Kent visited are even worse off than the Evesham and Pershore districts, since Kent does not grow the Egg Plum to any extent worth notice, if at all. Apples were found to vary in large portions of nearly every orchard traversed from total failure to good yields, failure or a small sprinkling of fruit being more common than fair or good crops. Damsons, so far as could be seen, are a total failure; Pears nearly as bad; and Cherries less than half an average crop; while hardly any Cobnuts could be found on the trees.

Strawberries on the whole appeared likely to be a fair crop in the event of rain coming quickly, but not otherwise. Raspberry canes lacked height and robustness, but were well set with fruit, though needing rain badly. Gooseberries were put at much less than an average, hardly any full crops being seen. In the parts of Kent traversed Black Currants must have been grubbed up to a very great extent, as we saw only about half a dozen pieces, and those small ones, although we made a point of asking to be shown any which were in the orchards visited. Only one good piece was noticed. We did not come across enough Red Currants to enable us to form an estimate of the yield.

Lest it should be supposed that the unfortunate state of affairs disclosed was due to neglect it is desirable to state that some of the best and most extensive growers of fruit in Kent were selected for visiting. In every case spraying had been persistently carried on, and in some places it was still in progress. In three places water is laid on all over the fruit land, and the spraying power was supplied by steam or oil engines. In all cases, too, the blossom on Plums, Cherries, and Pears, and on most varieties of Apples, had been abundant, the failure of the good promise being due to the dropping of blossom or fruitlets that were set.

Some of the best crops of Apples and Plums seen were in comparatively young plantations, as was noticed at Evesham and Pershore, and as is the case in my own orchards with Plums, but not with Apples. In all districts it was mainly mature orchards, some of which had borne great crops last year, where we walked for half an hour at a time without seeing any fruit or more than a sprinkling on the fine trees. This was so common an experience that the occasional sight of a fair crop on a group of trees called forth a pleasurable exclamation, while even a sprinkling caused comment.

No uniformity as to the fruiting of particular varieties of Apples was found, though a few stood out as more generally fruitful than others. Among these were King of the Pippins, Early Victoria, Worcester Pearmain, Red Reinette, Lord Grosvenor, Warner's King, and Royal Jubilee. Lane's Prince Albert and Bramley's Seedling are disappointing on the whole, as they were expected to be cropping well. They were found to be doing so in some places, but not in others. Newton Wonder and Lord Derby are good in places, but are very poor where they bore heavy crops last year. Cox's Orange Pippin nearly everywhere seems to be almost devoid of fruit, only one good and one fair crop of that variety having been seen. No good crop of Allington Pippin was noticed, and Beauty of Bath was not found up to the mark as a rule.

The Bush variety is the only Plum found in the Kent districts to be bearing even half a crop of fruit. Victoria and Czar were fair in a few cases, but not in the majority of the orchards; while nearly all the Prolifics and Monarchs seen were practically failures.

The aphis blight on Plums and Apples was found very bad as a rule, while brown rot was in evidence more or less upon both, and the fresh spread of silverleaf among Victoria Plums was striking.

MAIDSTONE DISTRICT.

Starting in the Maidstone district, we first drove to see two of the six fruit farms carried on by Mr. Edwin Chambers, of East Hall, Boughton Monchelsea. One of these farms had struck me on a former occasion as one of the best-managed out of many visited. Arriving first at Park Farm, Chart Sutton, with 104 acres of fruit, we found some good or fair crops of Domino, Bramley's Seedling, Worcester Pearmain, Lord Derby, Red Reinette, and Royal Jubilee Apples; while one of the two full crops of Beauty of Bath noticed in our travels was seen on this farm. Late Orleans were put first among Plums, as bearing about half an average crop, the Bush being second, with less than half an average, and Czar and Victoria next. Early Prolific may be described as a failure, and Pond's Seedling as nearly so. Damsons were found barren. On the whole, the fruiting on this farm was better than on most of the other orchards visited.

On Mr. Chambers' home farm the show of tree fruit was seen to be much smaller than on his Park Farm. Water is laid on throughout the home farm, and spraying has been carried on persistently. The aphis blight on Apples and Plums was less serious than in most other places. Bramley's Seedling and Newton Wonder Apples are not fruiting well at East Hall this season, but the former variety bears a good crop in another orchard. Worcester Pearmains were doing well in one part of the orchards, but not in other parts. A small crop of Czar Plums was noticed, while other varieties were found nearly bare of fruit. A light crop of Red Currants was seen, but not any piece of Blacks. The Cobnut crop was described as a failure, or nearly so. The best piece of Gooseberries seen in Kent was found on this farm.

A letter from the occupier of a neighbouring fruit farm, who was away from home at the time of our visit, describes the Apple crop as half an average, Plums and Cobnuts as failures, and Gooseberries and Currants as light crops.

The next visit was paid to Mr. Edmonds, whose fruitland at Allington (and elsewhere), near Maidstone, extends to 400 acres. One of the best Apple crops seen last year was found on this farm, which is admirably managed. Mr. Edmonds, jun., busy man though he is, made time to show us his orchards, and to accompany us to Messrs. Bunyard's nurseries near by. Apples, on the whole, are a fair crop, though not nearly as generally so as they were last year. A great crop of Grenadier was particularly noticeable, and fruit was well set on Lane's Prince Albert, Worcester Pearmain, and some other varieties. Newton Wonder was good, except where it had a heavy crop last year. Very few Victoria Plums were found on the trees, and Czars were as nearly bare in most places. A fair crop of Red Currants was seen.

On a neighbouring farm some Victoria Plums with a fair sprinkling were noticed. Bramley's Seedling and Lord Derby Apples were not well cropped as they bore heavily last year.

In Messrs. Bunyard's nurseries some of the best-fruited Cox's Orange Pippins found in our travels were seen. We did not go over much of the ground, but we understood from Mr. Buss, the manager, that the Apple crop was not so good as usual. Mr. Buss had recently returned from a visit to some of the more important Black Currant districts of Norfolk, and he estimated the yield at about two-thirds of a full crop.

FAVERSHAM DISTRICT.

Some of the best fruitland in Kent is in this district. One object in selecting it was to inspect the orchards of Messrs. Gaskain and Whiting, of Dargate, whose success at the last Kent Fruit Show was so remarkable. The farm extends to 80 acres, 60 acres of which are under fruit and most of the rest under hops.

Unfortunately Mr. Whiting, sen., was away from home, and his son was not seen until just before we were leaving, while the foreman was engaged. Consequently we could not obtain as much information as to methods of culture as we desired, though a farm pupil kindly showed us round and answered many of our questions. Our own observations, however, explained the great show success. The land is excellent and highly manured, mainly with the manure furnished by the cows kept for a dairy of considerable size, while spraying is persistently carried on by means of pipes laid all over the farm. More important still, perhaps, is the admirable training and pruning of the trees, the best which I have ever seen. The growers have been strikingly successful in obtaining what many of us aim at, but do not secure to the full extent desired—namely, Apple trees regularly furnished with sturdy cordons radiating from a hollow centre. Such success, it may be assumed, can be secured only by starting with young trees, pruning to any extent of severity necessary to obtain the form of tree desired year after year until the trees are fully furnished, attending to summer as well as winter pruning, and thoroughly thinning sets of fruit thick enough to exhaust the vigour of the trees if left unthinned. There is one other important point, that of preventing the destruction of the symmetry of the trees as a result of attacks of the aphis. Possibly the vigour of the trees and their openness to sun and air render them to a great extent immune from severe aphis attack; but spraying must also be thorough and persistent to keep them clean, and spraying in stronger force than can be afforded by any hand-power machine. An oil-engine supplies the power in the orchards under notice, and the force obtained is partially effective in repeated sprayings even after the leaves have begun to curl. But although there was hardly any aphis blight on Apple trees there was a great deal on Plums, which proves that the Plum aphis defies even high-pressure spraying.

Some of the finest trees of Cox's Orange Pippin I have ever seen were particularly noticed, many of them well cropped, but others not so. Warner's King, Quarrenden, Beauty of Bath and Worcester Pearmain were found more generally well loaded, while Annie Elizabeth, Bramley's Seedling, Lane's Prince Albert, and Newton Wonder in one place, but not in another, were classed as fruiting fairly. For Lord Derby this is an "off year" in the orchards under notice. The size of the Apples for their stage of growth was noticed as remarkable.

Few Plums or Pears were seen on the trees. Cherries were bearing better than in most other places, and Raspberries were well set.

Mr. W. W. Berry, of Gushmere Court, Selling, near Faversham, has 420 acres of fruit on his several farms, as well as about 300 acres of hops.

On a previous occasion I was much struck with the excellence and good management of his orchards. Last year he had excellent crops of Apples and Plums, but this is an unfortunate season for both throughout the Faversham district, with some exceptions as to Apples, and great numbers of trees were found almost or entirely barren. Here and there in our drive round some of the farms we came to an orchard in which some varieties of Apples were bearing well, but no good crops of Plums were seen.

Mr. Berry is a great grower of Cherries, and we saw more fruit on many of his trees than we found elsewhere in Kent. As an instance of the extensive grubbing-up of Black Currants, Mr. Berry informed us that he grew 40 acres some years ago, whereas he now grows only four acres.

The most extensive system of spraying which I have ever seen was in operation on the day of our visit. Pipes are laid all over the orchards and hop gardens—or at least over the greater parts of them—and we found one steam-power plant, a gas-engine plant, and two horse-power sprayers at work among the hops. The steam-engine forces spray stuff to a distance of three miles, and it was serving ten men, while the gas-engine, which operates for a much shorter distance, supplied fifteen sprayers. Mr. Berry informed us that he was spending £50 a day in spraying hops, and was prepared to keep on for as many days as may be necessary. The same spraying plants are used for fruit.

Swanley District.

On reaching Swanley our hopes of seeing some fine crops of fruit were damped at the outset by a good authority upon whom we called to obtain some information as to the addresses of certain growers with whom we had no appointment. His verdict was as follows :—"Apples a sprinkling, Pears hardly any, Plums practically none, Black Currants and Gooseberries poor crops, Strawberries light." This struck us as probably pessimistic, but we found it sadly near the truth.

There was no encouragement when we reached the home of Mr. John Wood, of Crockenhill, whose orchards of over 1,000 acres have been handed over to his son. He informed us that he was engaged in fruit growing when he was seventeen years of age, that he is now in his seventy-ninth year, and that the fruit crop all round this season is the worst he has ever known. Going more into particulars, he said that there was a very short crop of Apples on the whole, hardly any Plums except on the bush variety, and short crops of Black Currants and Gooseberries. Strawberries, he added, were light, and would be short if rain did not come quickly, while Raspberries were fruiting well, but also needed rain.

An inspection of many of the orchards confirmed this general statement. A few varieties of Apples, including King of the Pippins and Annie Elizabeth, were found to be bearing well, and our conductor informed us that there was a good setting of Cox's Orange Pippin in one orchard held by Mr. Wood a few miles away. Here and there we came to other varieties of Apples fruiting fairly, but the majority of the fine trees in the beautifully cultivated and clean plantations were seen to be barren or bearing only a sprinkling of fruit. A little fruit was noticed on Fertility and Catillac Pears, the first of any consequence seen anywhere in our journeys.

Other orchards inspected less completely were found, as a rule, in similar condition to that of Mr. Wood's; but two, of youngish Apples, were showing a good setting of fruit on many varieties.

Notwithstanding the briefness of the visits to certain of the orchards in this district, the evidence of poor crops was as complete as it was disappointing

Conclusion.

As generalisations have already been given it is only necessary to add that of the three Kent districts visited that of Maidstone is most favoured in respect of Apples, though excep tional orchards in the two other neighbourhoods were found equal to the best near Maidstone. With regard to Plums and other fruits no marked superiority for any district was noticed, except that Cherries are less deficient in the Faversham than in the Maidstone district.

SHANGHAI HORTICULTURAL SOCIETY.

"East is East, and West is West, and never the twain shall meet," are words, or perhaps the paraphrase of words, which are psychologically true; but had the writer of them been present among the motley throng of nationalities at the Shanghai Horticultural Show he might have been disposed to allow some truth to the older saw that "One touch of Nature makes the whole world kin." At the Shanghai Show all the nations of the earth assemble, as befits an exhibition held in the most cosmopolitan of cities. The colours of the visitors are as varied almost as those of the exhibits—white men, yellow men, brown men, and occasionally black men, all come, and in their several racial ways pay homage to the beauty of nature. Roses and decorated dinner-tables remind the Englishman of home, and the troupe of Japanese Geishas (see Fig. 185) who present the cherry-blossom dance express the joy universal among men in the presence of spring with its re-quickening of life. They even more than the splendid specimens of floristic art exhibited at the show reveal this unison of East and West. For the Japanese love of flowers is a finer, more subtle love than ours, and their sense of beauty is at once more perfect and more mystical than that which we enjoy. Yet ours, if heavy-handed, has at least the merit of being practical, and there is something to be said for our somewhat common-place but real appreciation of the beauties of flowers, in that it is accompanied by the desire to improve and compare. To the West, therefore, must be given the credit of organising their far-away flower show, of filling the hall (142 feet by 78 feet) with flowering plants, and of contriving to secure no fewer than fifty-one entries for the class of decorated dinner tables. For the successful carrying out of the project of the spring exhibition, Shanghai is indebted to Mr. D. Macgregor, the Superintendent of Parks, the hon. sec., judge and organiser of the Show. Mr. Macgregor is doing an admirable work in thus encouraging the pursuit of horticulture, and from the reports which we have received we can say that his energies and devotion are meeting with full measure of success.

Chief among the plants which figured at the Show were Carnations, Roses, Pelargoniums, Marguerites, and—by a Chinese exhibitor—blooms of the double-flowered Opium Poppy.



Fig. 185.—the "cherry-blossom" dance at a shanghai flower show.

ORCHID NOTES AND GLEANINGS.

ODONTIODA BRADSHAWIÆ MOCATTA'S VARIETY.

A specimen of the handsome cross between a blotched Odontoglossum crispum and the scarlet Cochlioda Noezliana is flowering with Ernest Mocatta, Esq., Woburn Place, Addlestone (gr. Mr. Stevenson), the finely-grown plant bearing two spikes, one with twenty-seven, and the other with sixteen flowers.

The variety is intermediate between the original form raised by Messrs. Charlesworth and Co., and illustrated in the *Gardeners' Chronicle*, January 19, 1907, p. 36, and O. Bradshawiæ Cookson's variety, illustrated March 13, 1909, p. 174, the colouring being nearest to the latter. The middle of each segment is closely blotched with Indian red, the broad margin magenta rose, the colour being equally divided, and clearly defined. The lip, which is broader than in most other varieties, is coloured like the petals, the top being light rose.

DISA STELLA.

Several plants of a hybrid raised in the gardens of Mrs. Bischoffsheim, The Warren House, Stanmore (Orchid grower Mr. Taylor) between Disa grandiflora and D. kewensis (grandiflora × tripetaloides) are now in flower, and it is interesting to note that although all came from the same seed capsule there is great dissimilarity in the flowers, which may be divided into two distinct classes, one of which closely follows D. kewensis, the expanded lateral sepals being rose-pink, the galeate odd sepal white with purple spots, and bearing six or seven flowers on the spike. The other section may be likened to a dwarfer form of D. grandiflora, which it resembles in colour, although the marking on the odd sepal in one is veined, and in the other occurs in spotted lines, more nearly as in the rose pink

form. This section has the lateral sepals scarlet on a yellow ground, and the flowers are fewer and larger than in the rose-pink kind. The vagaries of colour production or suppression in hybrid Disas is very interesting, the grandiflora section of the present hybrid being the first to show distinctly the scarlet of D. grandiflora and its dorsal sepal. Reference to the illustration and description of Disa kewensis (grandiflora (uniflora) × tripetaloides) (*Gardeners' Chronicle*, September 7, 1895, p. 273), with its purplish-rose flowers with peculiar spotting derived from the blush-white, purple-spotted little D. tripetaloides, shows little trace of D. grandiflora. When crossed again with D. grandiflora some of the plants are practically D. kewensis without the spotting (not always present in D. kewensis), but others might pass for D. grandiflora, the second crossing giving predominance to that species in some of the seeds.

In Disa Veitchii (grandiflora × racemosa) illustrated in the *Gardeners' Chronicle*, July 28, 1894, p. 93, we have rose-purple flowers with no trace of scarlet, and in other crosses there have been similar results. Disa Diores (Veitchii × grandiflora), flowered by Messrs. Jas. Veitch and Sons in 1898, showed in some of the forms a slight trace of scarlet in its rose-purple flowers, but the reverse cross named Clio, in which the seed-bearer was D. grandiflora, showed none of the colouring of that species.

Disa grandiflora has grown and flowered magnificently at The Warren House for some years, but in the present season they are not up to the former standard. *J. O. B.*

SCOTLAND.

FRUIT PROSPECTS IN NORTH SCOTLAND.

THE fruit prospects in the Aberdeen district are highly favourable. Strawberries, one of the most important crops, are looking remarkably well, and promise to give splendid results. Apples, Cherries and Plums blossomed freely, but it is as yet too early to express an opinion on the setting of these fruits. Gooseberries are not so promising as some fruits, and their appearance betokens a considerable shortage. Black Currants are a fair crop, but there are now fewer bushes, many having been destroyed owing to infestations of the mite. White Currants are fair. *Correspondent.*

PLANT NOTE.

HELICHRYSUM BELLIDIOIDES.

THIS little plant (see Fig. 186), which received the R.H.S. Award on April 15, 1913, is pleasing and pretty. When not grown under glass the date of flowering is at the end of April and during May. The flowers are about half an inch across, with a double or treble row of clear white pointed rays and a fluffy, greenish-yellow disc of florets in the centre. The prostrate growths are slender, and are covered with small ovate leaves, green above and whitish on the under surface. The flowers are borne on stems 2 to 4 inches high; the flower stems have narrow bracts, and are covered by white, cottony hairs. This pretty "Everlasting" was received by the Glasnevin Botanic Gardens as an unnamed plant in an importation of Celmisias, Olearias, and other plants sent by Mr. Henry Travers from New Zealand in 1908, and is one of the best subjects for the rockery introduced during the last few years. At Glasnevin the species has been killed in the open by a severe winter, for which reason it is advisable in wet localities to cover the plants with a sheet of glass during the cold months. But the plant survived the weather of last winter, which was very mild. It should be planted in the sunniest place available, in a fairly dry and well-drained soil. Flowers are sparingly produced when the plant is shaded, and they require the sun to make them open fully. But in favourable conditions they flower so freely that the foliage is hidden by the blossoms. The plant is a remarkably good grower, and very easy to increase, for it spreads by means of underground stems, whilst the trailing stems often root into the ground as they spread.

Unfortunately, plants have been distributed under the wrong name of H. bellidifolium. All the New Zealand species of Helichrysum are endemic, and some of the other members are well worth introducing to gardens. From dried specimens Helichrysum Leontopodium looks a beautiful silvery plant very much like the European Edelweiss in general appearance. The flower heads are structurally different.

The photograph shows a tuft of plants 2 feet across, which have grown in the open for three years in Mr. P. O'Mahony's garden at Mucklagh, Co. Wicklow, at about 1,000ft. altitude. *C. F. Ball*



FIG. 186.—HELICHRYSUM BELLIDIOIDES ON A ROCKERY IN IRELAND.

The Week's Work.

THE FLOWER GARDEN.

By EDWARD HARRISS, Gardener to Lady WANTAGE, Lockinge, Berkshire.

EARLY-FLOWERING CHRYSANTHEMUMS.—Plants which were put out early in May are growing freely. Keep the roots well supplied with water, and mulch them with short manure. A vigorous syringing occasionally with clear water will encourage strong, clean growth. Should aphides appear on the plants, syringe the foliage with an insecticide; it is wise to spray with some insecticide of moderate strength at regular intervals as a preventive of this pest. If the plants are not yet staked, the work should be done at once, as the shoots are damaged easily by strong winds. The shoots may be pinched for the last time, if this is deemed necessary.

VIOLETS.—The hot, dry weather which occurred recently has favoured the spread of red spider on Violets, and the foliage should be washed thoroughly by means of the hose pipe every evening. An occasional dusting with well-seasoned soot will be of benefit. Hoe the soil between the plants frequently.

ORNAMENTAL GOURDS.—Where space is available in a suitable situation, ornamental Gourds should be grown, as they are most interesting objects. They are admirable subjects for training over pergolas, arches, or lattice-work, also for covering the face of large boulders. When in active growth, the roots need plenty of water and food, or the results will be disappointing. Syringe the foliage frequently during hot, dry weather, to keep the leaves clean. Regulate and stop the growths from time to time, and provide support for the largest fruits as they approach maturity.

GENERAL WORK.—As soon as the work of planting bedding subjects is finished, make the pleasure grounds tidy. Clip the grass edgings and weed the roads and paths. Advantage should be taken of fine weather to destroy weeds in shrubberies, and the ground between the shrubs should be loosened with the hoe, to present a tidy appearance. Much may be done to conserve moisture in the ground by applying mulches and keeping the surface soil loosened by hoeing. Stake and tie herbaceous plants as their requirements demand, and thin the shoots of large clumps of strong-growing plants freely. Remove dead leaves and flowers, and do all that is possible to keep the flower garden neat and tidy.

THE ORCHID HOUSES.

By W. H. WHITE, Grower to Sir TREVOR LAWRENCE, Bart., Burford, Dorking.

CATTLEYA.—Plants of Cattleya Mossiæ, C. Mendelii, C. Skinneri, hybrid Cattleyas and Lælio-Cattleyas that have finished blooming and growing freely may be repotted, following the directions given in a former calendar (see p. 288). Lælia purpurata should be placed in the cooler part of the house in order to keep the growth dormant for as long a period as possible, for if they are kept in a warmer atmosphere there is a danger of them starting into growth prematurely, with the result that the early growths will fail to flower. When the shoots of plants that have been rested are a few inches long, new roots appear, and that is the proper stage for repotting those that need increased rooting space. This Orchid grows freely and should not be pot-bound for any length of time. Not all, but practically all, of the hybrids of L. purpurata require similar treatment to that advised after the flowering is over. Water the plants with extra care, affording only sufficient moisture to prevent undue shrivelling of the pseudo-bulbs. Stand the plants where they can be very lightly shaded, and where they may obtain plenty of fresh air at all times. The same remarks apply also to C. Warneri. Plants of C. Bowringiana and several

of its hybrids, including C. Mantinii, C. Mrs. J. W. Whiteley, C. Brownii, C. Portia and L. C. Tiresias, having been rested for a long time, have commenced to grow again, and should therefore be placed at the warmer end of the house, gradually accustoming them to more frequent applications of water at the roots. Plants that develop fresh roots and need repotting should be attended to. Where a fairly representative collection of Cattleyas, Lælias and their numerous hybrids is grown, the plants at this season will be found in all stages of growth; whilst some are at rest, others are making large numbers of roots, although no signs of top growth may be seen. The cultivator must therefore use his discretion as to the treatment they need, but if the plants are exposed to the light, an abundance of fresh air and only very moderate quantities of water for the next few months, they will continue healthy. My practice is to examine the smaller plants twice weekly, affording those that are quite dry and making new growth a thorough watering; larger specimens with a greater mass of rooting materials do not dry so quickly and are only examined once a week.

Phaius.—The treatment advised for evergreen Calanthes is also suitable for such plants as Phaius Sanderianus, P. Wallichii, P. grandifolius, P. assamicus, P. bicolor, P. Cooperi, P. Blumei and P. purpureus; also the distinct hybrids P. amabilis, P. Cooksonii, P. Norman, P. Chapmanii and P. Marthæ, Phaio-Calanthe Arnoldiæ, P.C. Schroderiana, P.C. Colmanii, and the distinct Phaio-Cymbidium Chardwarense. Phaius tuberculosus thrives best when fastened to teak-wood rafts upon which a layer of Osmunda and moss has been placed. Plunge the raft in a pot, keeping it nearly in an upright position. Plants of this pretty species are growing freely, and it is advisable to examine the young growths frequently for the presence of small thrips, as these tiny insects frequently get low down in the growth before their presence is suspected. Whether thrips are present or not, it is a good plan to bring the plants into any house that is to be fumigated. Grow the plants in a moist, shady corner of the hottest house, and keep the compost moist at all times. When in full growth a slight damping overhead occasionally is beneficial, as it not only favours growth, but also checks attacks of insect pests.

PLANTS UNDER GLASS.

By F. Jennings, Gardener to the Duke of Devonshire, Chatsworth, Derbyshire.

Nicotiana Sanderæ.—Plants raised from seeds sown at this time, and grown in an intermediate house, will be well in flower in November and December. The seeds should be sown in pots or pans filled with porous soil. They should be lightly covered, watered, and placed on a shelf in a warm house where they will be shaded from the direct rays of the sun. When the seedlings are large enough to handle they should be pricked off into pans or boxes, or into small 60-size pots. For the final shift use pots 5 or 6 inches in diameter; the compost should consist of good loam, leaf-mould, coarse sand, and decayed cow manure. Fumigate the plants on frequent occasions, and place them in a stove or other warm house when the flowers are ready to open.

Rhododendron indicum (Azalea indica).—Plants of Azalea indica which have finished their growth and set their flower buds should be placed out-of-doors (preferably in a position not too exposed to the sun) on an ash bottom; or, better, plunge the pots in ashes. The plants are rather top-heavy, and this latter method saves the loss involved by broken pots and plants. The foliage should be well syringed on mornings and evenings to prevent attacks of thrips. Keep the roots moist by affording plenty of water. The plants should be fed regularly with soot and manure water.

Lapageria.—Young growths of Lapageria should receive attention; they require tying up as straightly as possible, and should be well syringed every morning. They should also be regularly fumigated, and soot-water used to keep the roots moist.

General Work.—Tree Carnations and Codiæums (Crotons) should be re-potted if necessary; also Dracænas, Pandanus, Begonias, Salvias, Bouvardias, and Ferns, which were potted in the early spring, and will be required as specimens. All stove plants should be carefully watched for insect pests, as their future health and beauty depends in great measure upon their cleanliness and freedom from insects at this period. The early batch of Poinsettias should be ready for transferring to 4½-inch pots. They should be well watered after potting, and shaded from sunshine. Early in the afternoons, close the house and syringe the plants thoroughly.

THE HARDY FRUIT GARDEN.

By B. Goodacre, Gardener to Sir Ernest Cassel. Moulton Paddocks, Newmarket.

Fruit Protection.—Netting, or some other means of protection from birds, should now be provided for all small fruits; Currants, Gooseberries, Brambles, including Loganberries, Newberries and Raspberries, and Cherries on walls. If the weather continues warm and dry the birds will attack the fruits long before they are matured, in order to obtain moisture, and if the nets are not already at hand they should be ordered at once. The netting should be suspended well above the plants; for bush and wall fruits it should be carried on strong supports, which may remain in position for years if properly constructed. A few stout stakes of larch answer the purpose admirably; they should be driven well into the ground at intervals the required distance away from the trees, and afterwards surrounded with wire netting of a fine mesh. This method will prevent not only birds but also many of the larger insect pests gaining access to the fruits, and is also more economical than using fish netting, which is not nearly so durable. The structure should be made large enough to continue in position for some years without any risk of cramping the growth, and high enough to admit of the entrance of the grower to gather the fruit without disturbing the netting.

Insect Pests on Wall Trees.—The warm, dry weather has been productive of a particularly large number of insect pests, and greater precaution than usual is necessary to keep the trees clean. Red spider has already made its appearance on wall Peaches; where the trees are protected with glass copings syringe the foliage constantly with water, to which has been added a little Quassia extract. The syringing should be done in the evening, just after the sun's rays have left the wall; it will prove of double benefit, as it will keep the trees moist as well as destroy the pest. If the Cherries are infested with black fly the affected shoots should be cut away and the trees syringed with an insecticide. After each application a syringing of clear water should follow; this method will be found to be a great improvement on the old plan of applying tobacco powder.

FRUITS UNDER GLASS.

By James Whytock, Gardener to the Duke of Buccleuch, Dalkeith Palace, Midlothian.

Figs.—The first crop has been gathered from the trees planted out. Although during the ripening of the first crop the foliage and border were kept dry, every encouragement should now be given to the second crop. The foliage should be well syringed twice daily (when the weather is fine) to check red spider, to which the trees are very susceptible in warm weather. If the trees are large, with a good crop of fruit, and the roots fill the border, frequent applications of manure water will be necessary, and the border should also be top-dressed with well-decayed manure. Maintain a moist atmosphere, and on sunny days close the house in the afternoon when the temperature is 80° or 85°. Ventilate the house freely on all favourable opportunities, for the Fig will not thrive in a close, stagnant atmosphere.

Early Vinery.—The grapes being all cut from the vines, the ventilators should be wide open constantly. In order to keep the foliage fresh and clean the leaves should be syringed two or three times a week, until mature, with clear water. Should red spider be present on the leaves the latter should be sprayed with insecticide late in the afternoons. If the inside border has become dry whilst the grapes were ripening it should be well moistened with clear water. Early Muscat vines on which the fruit is ripening will require plenty of fire heat on cold days. Attacks of red spider must be checked, but use insecticides with caution, as the foliage of Muscat grapes is more easily injured than that of other vines. The leaves are also subject to scorching by bright sunshine after a period of dull weather. The glass may be shaded by spraying a little flour and water over the roof. The inside border should be watered if necessary; but extremes either of wetness or dryness should be avoided, especially at the present stage, when a check would be highly injurious to the crop.

THE KITCHEN GARDEN.

By John Dunn, Foreman, Royal Gardens, Windsor.

Cucumbers.—Cucumbers bearing fruit growing in pits or frames require liberal supplies of water at the roots. Atmospheric moisture should also be afforded by a frequent use of the syringe. The house should be closed early in the afternoons; in very hot weather a little air may afterwards be permitted to enter throughout the night, and, in any case, a close, stagnant atmosphere should be prevented. Stop the shoots regularly, and remove all surplus growth and decaying foliage. A top-dressing of loam and decayed manure in equal quantities should be applied to the bed whenever the roots appear above the surface. Guard against over-cropping. Further plantations may be made in cold pits to provide supplies throughout August and September. All the Year Round and Every Day are good varieties for this purpose.

Spinach.—During hot weather this crop should be watered frequently. Further sowings may be made in the cooler part of the garden. Spinach can be grown in cold pits from now onwards until the space is required for Winter Lettuce and Endive. The seed should be sown broadcast, and the crop watered freely every day.

Beetroot.—Plants of the earliest sowing are ready for use, and the successional crops should be thinned to nine inches apart. Hoe the ground frequently between the lines, but take care not to injure the roots. A sowing of Egyptian Beet made now will provide good-sized roots for use during the winter and spring.

Carrots.—A sowing of stump-rooted Carrots should be made to furnish roots for winter and early spring use. Model and Monument are good varieties, as they retain their colour well and have a very small core. A space of fifteen inches should be allowed between the drills, and the young plants should be thinned to six inches apart as soon as they are large enough to handle. If the soil is dry the drills should be watered freely in the evening and the seeds sown very early the following morning. The seedlings should be dusted frequently with soot, always, if possible, on a damp day.

Celery.—The main crop of Celery should be planted as soon as practicable. If the plants are allowed to become stunted in the nursery-bed they are almost sure to be attacked by the Celery fly and seriously damaged in consequence. A liberal supply of farmyard manure should be placed in the bottom of each trench, and covered with four inches of the finest soil. After the plants are set out they should be watered thoroughly, and throughout the whole period of growth they should never be allowed to become dry at the roots.

Mulching.—Peas, Scarlet Runners, and Dwarf Beans should be mulched at once. After the manure has been spread over the surface of the soil, it should be watered thoroughly, if possible, with soft water.

Globe Artichokes.—This crop should be afforded a copious watering with liquid manure. A covering of long litter may afterwards be placed over the surface of the bed in order to retain the moisture in the soil for as long as possible. As soon as the Artichokes have been cut the stems should be removed and the side shoots encouraged to produce crowns later in the season.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

APPOINTMENTS FOR JULY.

TUESDAY, JULY 1—
Roy. Hort. Soc. Summer Sh. at Holland House, Kensington (3 days). Roy. Agric. Soc. of England Sh. at Bristol (5 days). Sutton Rose Sh. Scottish Hort. Assoc. meet.

WEDNESDAY, JULY 2—
Penarth Rose Sh. Hanley Park Fl. Sh. (2 days).

THURSDAY, JULY 3—
Ipswich and E. of England Fl. Sh.

FRIDAY, JULY 4—
Nat. Rose Soc. Exh. at Botanic Gardens, Regent's Park.

SATURDAY, JULY 5—
Soc. Française d'Hort. de Londres meet.

TUESDAY, JULY 8—
Wolverhampton Floral Fête (3 days). Baltic Rose and Sweet Pea Sh. at the Merchants' Hall, London. Roy. Scottish Arbor. Soc. Exh. and general meet. at Paisley (4 days). Cork Fl. Sh. (2 days).

WEDNESDAY, JULY 9—
Dover Fl. Sh. Elstree Fl. Sh. Saltaire Fl. Sh. West Surrey Fl. Sh. at Camberley Park.

THURSDAY, JULY 10—
Potter's Bar Fl. Sh. Weybridge Fl. Sh. Women's Agric. and Hort. Soc. Sh. at Botanic Gardens, Regent's Park.

FRIDAY, JULY 11—
Manchester Fl. Sh. (2 days).

SATURDAY, JULY 12—
Nat. Amateur Gard. Assoc. Sh. Congleton Rose Sh. Edgware and Little Stanmore Fl. Sh. Co-partnership Festival at Hampstead Garden Suburb.

MONDAY, JULY 14—
United Hort. Ben. and Prov. Soc. meet.

TUESDAY, JULY 15—
Roy. Hort. Soc. Coms. meet. (Masters Memorial Lecture at 3 p m. by Prof. R. F. Biffen, M.A., on "Some Factors in the Prevention of Disease in Plants.") Nat. Rose Soc. Sh. at Gloucester, in conjunction with Gloucestershire Rose and Sweet Pea Soc. Sh. Southampton Fl. Sh. (2 days).

WEDNESDAY, JULY 16—
Reigate Fl. Sh. Nottinghamshire Hort. and Botanical Soc. Fl. Sh. (2 days). Bishop's Waltham Fl. Sh. Watford Hort. Soc. Sh. at Little Cassiobury.

THURSDAY, JULY 17—
Nat. Sweet Pea Soc. Sh. at R.H.S. Hall. Carnegie Dunfermline Trust Summer Fl. Sh. (2 days). Dulwich Fl. Sh. Isle of Wight Fl. Sh. Lincolnshire Agric. Sh. at Lincoln.

FRIDAY, JULY 18—
Nat. Carnation and Picotee Soc. Sh. at R.H.S. Hall, Westminster. Birmingham Hort. Soc. Sh. (2 days).

SATURDAY, JULY 19—
Blackburn Fl. Sh.

TUESDAY, JULY 22—
Southampton Fl. Sh. (2 days). Ulster Rose Sh. (2 days).

WEDNESDAY, JULY 23—
Leamington Fl. Sh. (2 days). Cardiff and County Hort. Soc. Sh. (2 days). Tunbridge Wells Agric. and Hort. Sh. (2 days). Hayward's Heath Fl. Sh. Twickenham Fl. Sh. Yorkshire Agric Soc. Sh. at York (3 days).

THURSDAY, JULY 24—
Horticultural Club: Excursion to Friar Park. Roehampton Fl. Sh.

TUESDAY, JULY 29—
Roy. Hort. Soc. Coms. meet and Nat. Gladiolus Soc. Sh. and ann. gen. meet. (Masters' Memorial Lecture at 3 p.m. by Prof. R. H. Biffen, M.A., on "Some Factors in the Prevention of Disease in Plants.")

WEDNESDAY, JULY 30—
Midland Carnation and Picotee Soc. Sh. (2 days). Co. Clare Hort. Soc. Summer Sh. Normanby Estates Agric. and Hort. Sh. (2 days). Bishop's Stortford Fl. Sh.

THURSDAY, JULY 31—
Roy. Lancashire Agric. and Hort. Sh. at Burnley (4 days). Holyport Fl. Sh. Northallerton Fl. Sh.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich—61.6.

ACTUAL TEMPERATURES:—

LONDON.—*Wednesday, June* 25 (6 p.m.); Max. 66°, Min. 51°.

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday, June* 26, (10 a.m.); Bar. 29.9; Temp. 66. *Weather*—Overcast.

PROVINCES.—*Wednesday, June* 25, Max. 60°, Valencia. Min. 54°, Aberdeen.

SALES FOR THE ENSUING WEEK.

THURSDAY NEXT—
Special sale of rare Established Orchids; also imported Orchids, at 67 and 68, Cheapside, E.C., by Protheroe and Morris, at 1.

Mutation in Micro-Organisms.

No excuse is needed for referring in this place to the extraordinarily interesting summary of recent discoveries of mutations in micro-organisms which is contributed by Mr. Clifford Dobell to the *Journal of Genetics* (Vol. 2, No. 4, 1913), for, as all know, micro-organisms are the unconscious arbiters of the destinies of the world of higher animals and plants. They control the increase of the higher plants, and only too often determine the decease not only of those plants but of ourselves. In the picturesque language of popular science the micro-organisms are our hidden friends and foes. It is therefore of paramount importance to mankind to know whether the sum of the good and evil which bacteria, fungi, and other micro-organisms work upon us is fixed or fluctuating. Are these minute forms of life endowed with definite and unalterable qualities, or may they change their habits—doing good instead of evil, or evil instead of good—according to circumstances and to unknown laws of mutation? There seems little doubt but that change and not stability is the habit of these all-potent micro-organisms. We know, for example, that the nodule organism of the Leguminosæ requires as it were to learn its trade: that if it has been accustomed to work and live in the root of a clover it does not readily change its habit, nor does it take kindly to a change of situation—for instance, it will not readily take up its lodgment in a different leguminous plant. There is reason, indeed, to believe that those micro-organisms may, like ourselves, learn in the school of experience and change to suit changed circumstances. Of course people will go on wrangling over the barren controversy as to the meaning of this power of change. Many will see in the facts to be described evidence for the inheritance of acquired characters; but into that at present desolate domain of controversy we will not enter now. Of the numerous examples of mutation recorded by Mr. Dobell we may mention a few of the most striking. Among bacteria few have been studied more closely than the series of forms which include at one end the common "harmless" Bacillus coli, and at the other the Bacillus typhosus of typhoid fever.

One character which distinguishes these end members consists in the power possessed by B. coli and not possessed by B. typhosus of splitting the sugar, lactose, and thereby forming lactic acid. Now it has been discovered that middle members of the B. coli group which lack the power of producing acid from this sugar may suddenly acquire it. More remarkable still is the observation, which has been verified, that not all the cells of a race which originally lacked this power are able to acquire it. Only some of the daughter cells come to possess the power, the others remain permanently without it. It is as though the original form which lacked the power was heterozygous for this character, and that when given the chance of exercising it the character segregated, so that some remained heterozygous and powerless and others became pure and powerful to acidify the medium on which the race is living.

In certain cases this power of developing "new" characters has been shown to be associated with the power to set up disease. In a famous case, for example, a patient developed a new disease, and simultaneously a bacterium with new properties appeared in the body of the patient. This bacterium was isolated and kept under observation outside the body. By and by the bacterium cultivated in the laboratory lost its newly-acquired property, and simultaneously the patient recovered. His bacteria were found also to have lost the new and objectionable property. Unfortunately, however, the laboratory bacteria after about a year contracted again the old bad habit, and at the same time the patient fell sick again.

To those who work among plants, and who know the mysterious coming and going of diseases of plants, these facts cannot fail to be of deep significance. They show that the mycologist's work, like that of woman, is never done, and that there will be no occasion for the mycological Alexander to sigh for new worlds to conquer. The bacterial and other pathogenic micro-organisms will keep him busy till the end of time.

Supplementary Illustration.—Kearsney Court, the subject of the Supplementary Illustration, is situated in the village of Kearsney, one of the most delightful spots in Kent, close to the beautiful Alkham Valley, between Dover and Folkestone. The grounds were laid out by Messrs. MAWSON BROS., of Windermere, for the late Mr. E. P. BARLOW, and consist of some 24 acres, of which 12 acres are devoted to pleasure gardens. The residence stands on a hillside, and a series of terraces lead to the ornamental water pool shown at the bottom of the picture. The terraces enclose lawns with borders of hardy herbaceous flowers, and the walls are planted with Pear trees, grafted on the Quince stock, which best suits the chalky soil of the district. There is also a pretty bastion garden surrounded by a hedge of Golden Yew, in which are flower beds and borders. The gardener, Mr. W. G. SHERLOCK, informs us that 8,000 bedding plants were formerly raised every year for the embellishment of the gardens, including some 3,000 Pelargoniums. Croquet and lawn tennis grounds are approached by a path bordered on the one side with a hedge of Lavender, and on the other with Sweet Briars. There is also a Rose garden enclosed by a hedge of Yew, whilst a lake spanned by ornamental bridges with cascades provides further interest. The kitchen garden is laid out in four squares, and is well stocked with fruit trees, including 70 varieties of Apples. In the centre of the four squares is a water pool, spanned by a pergola furnished with Roses. The glasshouses include vineries, Peach houses, a plant stove, several greenhouses, heated pits and frames.

LORD GRENFELL AS A GARDENER. — At a Court of the Worshipful Company of Gardeners on June 20 the honorary freedom of the Company was conferred upon Field-Marshal Lord GRENFELL in recognition of his twelve years' association with the Royal Horticultural Society, of which he was appointed president a few weeks ago. Six Freemen were elected into the livery, and Sir JEREMIAH COLMAN, Bt., and Mr. C. BIRCH CRISP are to be admitted to the freedom of the Company. Lord GRENFELL, replying to the toast of his health,

declared that he had been a gardener nearly all his life, and wherever he had been stationed he had done his best to make a garden in the vicinity. He had done so in Canada and in Malta, where he believed he was the first to produce Roses. It had been supposed to be impossible to grow English Roses in Malta, but he had imported a large number and had grown them successfully. In India he had no garden, as it seemed to be the custom there to employ a gardener to steal flowers from one's nearest neighbour. He had, however, a garden in Egypt, where he spent twelve years. He started a horticultural society there, and he thought that by the time he left there had been a great improvement in the culture of flowers. Owing to the rise of the Nile it was very difficult to grow flowers in Egypt. He remembered digging the ground to plant some Tulips and coming to the water of the Nile about 6 inches down. The outgoing Master of the Company, Mr. G. Rowland Blades, said that during his year of office it had been his pleasure to establish a common hall fund, which would provide a permanent home for the Company. He proposed, as an additional proof of his great regard for the Guild and for the interests of gardening, to offer a substantial sum to the President of the Board of Agriculture as an endowment for the cause of technical education in gardening. Certain conditions would be attached, the chief of which would be that the name of the Worshipful Company of Gardeners should be for ever associated with the gift.

The Veitchian Nurseries and Sir Harry J. Veitch.—The announcement in our advertising columns respecting the approaching sale of portions of the Veitchian Nurseries will be read with feelings of profound regret, since it indicates the impending retirement of Sir Harry J. Veitch. It has, however, been recognised for some time past that Sir Harry could not continue to work as he had done in recent years. Indeed, his many friends, and the public generally, were surprised when, some eight years ago, owing to the indisposition of his nephew, Mr. James H. Veitch, Sir Harry threw off the retirement he had already assumed, and again took up the cares and responsibilities connected with the management of the business. With what vigour and zeal he has carried out the duties of his office our readers are well aware; and he has done at the same time an amount of public and charitable work which would be quite sufficient to occupy the whole time of any ordinary man. As recently as Wednesday last a large company had the opportunity of listening to a statement of the wonderful progress made by the Gardeners' Royal Benevolent Institution, of which he is both Chairman and Treasurer, and for which he has laboured indefatigably for many years. But there is a limit to the period during which human effort can be sustained, and Sir Harry Veitch, now that he has passed the age of three score years and ten, recognises that he must soon give up some of his more strenuous duties. The approaching expiration of the lease of the Coombe Wood Nursery has provided the opportunity for determining what shall be the fate of the nurseries when Sir Harry can no longer direct their management, and it has been decided to dispose of them by sale, though this may take some little time. Sir Harry has received many honours, one of the more recent being the knighthood conferred upon him by the King on the occasion of the International Exhibition at Chelsea last year. He has always exhibited the highest qualities, both in business and private life, and he enjoys the confidence and affectionate respect of every horticulturist. For these reasons, the announcement Messrs. Protheroe & Morris are publishing this week is an event of great interest, not only to horticulturists in these islands, but also to the large numbers abroad to whom the name of Veitch is a household word.

How Dr. Masters wrote "Vegetable Teratology."—By the kindness of Miss Rathbone, the Linnean Society has recently come into possession of an interesting letter, written by the late Dr. Maxwell T. Masters, F.R.S., and sent with a copy of his *Vegetable Teratology* to Dr. Joseph Hooker, as he then was, to whom that book was dedicated. The Council of the Linnean Society has readily consented to the letter appearing in our columns, an appropriate place of publication for many reasons.

[Copy.]

July, 1869.

"My dear Dr. Hooker,—I asked you to allow me to dedicate this book to you on personal grounds only. It would have been a piece of impertinence to have done otherwise. The history of the book is just this:—Some fifteen or sixteen years ago I happened to come across a double gorse which puzzled me a good deal at the time. My father came to my assistance and gave me the clue to its structure. Soon afterwards I got hold of a curiously twisted teazel stem and pottered about mentally to try and make out how and why it had got so deformed. About the same time Edward Forbes gave me a fragment of a flower of the Victoria regia to pull to pieces, with which I remember to have been not a little delighted. Forbes indoctrinated me with Goethe's notions and my bias was confirmed. While at Oxford I collected and made notes on all sorts of oddities, and noted what had been written thereon. All this was thrown overboard when I came again to London to practise medicine, and for eight or ten years my notes laid on the shelf. The only botanical work I could do at all was the Restiaceæ, which were monographed (in part) under difficulties. Then you came and lifted me off the treadmill: the Restios were finished off, the teratological notes were taken off the shelf, worked up, added to [and] at Salter's suggestion cast into form for the Ray Society, and here they are. I think you will admit I had strong personal reasons for dedicating the book to you, and I thank you most heartily for the permission to do so.—Faithfully yours, Maxwell T. Masters."

An American Horticulturist in England.—Mr. J. C. Vaughan, head of the firm of Messrs. Vaughan's Seed Store, Chicago and New York, is on a visit to this country after an absence of 21 years. He also intends visiting France, Belgium, Holland, Germany, and Italy. Mr. Vaughan is chairman of the National American Council of Horticulture, ex-president of the American Seed Trade Association, and ex-president of the Society of American Florists. In 1885 he established the first American trade paper, *The American Florist*, which continues to flourish as the representative medium of the seedsmen, nurserymen, and florists of the United States and Canada. Besides horticulture, Mr Vaughan is also interested in agriculture, and he has extensive interests in Texas fruit culture. We extend to Mr. Vaughan, on behalf of British horticulturists, a hearty welcome. Letters addressed to the Savage Club, London, will reach him whilst in this country.

Seedsmen at Cricket.—Favoured by splendid weather, the annual cricket match between the members of the staffs of Messrs. James Carter and Co. and Messrs. Watkins and Simpson took place on the 14th inst. at Raynes Park. Messrs. Carter's team batted first and made 80 runs, of which Mr. T. Groves secured 53. For the visitors, Day made 15, the team being all out for 36, Mr. T. Groves taking nine wickets for 20 runs in nine overs. After the match the cricketers and visitors assembled at tea provided by Messrs. Carter.

Ghent Summer Show.—We learn that entries for the Horticultural Exhibition which is to take place at Ghent from the 9th to the 17th August have been received from many quarters other than Belgium, and the show promises to be a great success. The allocation of space in the great Hall has been carried out by Monsieur de Wilde, who is the Director of Plantations for the Municipality of Ghent. The design is in extremely good taste. The restaurant at one end is to be flanked by masses of flowers.

Belated Discovery of a Gardener's Will.—A few days ago Mr. F. Jennings, head gardener to the Duke of Devonshire, Chatsworth, discovered in the ceiling of a storeroom adjoining his office a neatly sealed will, belonging to the late gardener, Mr. Chester, who died in July, 1908, at the age of seventy Chester left a sum of £5,000, and as no will could be found at the time, the money was handed over to distant relatives in Australia. By the terms of the will now discovered, the money was left by Chester to his housekeeper, Miss Prince, who has lately been residing in Liverpool. She has stated her intention of taking steps to recover the money. Mr. Jennings' house, shown in fig. 187, is the same as that formerly occupied by Sir Joseph Paxton when he filled the position of gardener to a former Duke.



Fig. 187.—the gardener's house, chatsworth.

Annual Excursion of Horticultural Club.—The annual summer excursion of the Horticultural Club, which was first arranged to take place on Wednesday, July 16, has been postponed until Thursday, July 24. On the latter date the Club will accept the kind invitation of the President, Sir Frank Crisp, Bt., to visit the gardens at Friar Park, Henley-on-Thames. The journey will be made partly by river and partly by rail; details will be published next week.

Annual Dinner of Royal Gardeners' Benevolent Institution.—The seventy fourth anniversary festival dinner of the Royal Gardeners' Benevolent Institution took place at the Hotel Metropole on Wednesday evening, the 25th inst. Leopold de Rothschild, Esq., C.V.O., presided over a very large company. We hope to print details of this function in our next

issue, but in the meantime it gives us great satisfaction to announce that the sum raised at the dinner on behalf of the funds of this praiseworthy institution amounted to upwards of three thousand pounds.

IMPERIAL BUSINESS ASSOCIATION. — The inaugural meeting of the Agricultural and Horticultural branch of the Imperial Business Association, which was held during the recent show at Chelsea, was followed by a second meeting in the R.H.S. lecture-room on the 17th inst. The chair was taken by Mr. W. H. PAGE, Nurseryman, Hampton, and among those present were Sir JOHN COCKBURN, late Australian Minister of Agriculture; Messrs. MASON, HARVEY, W. E. WALLACE, L. H. COOK, a representative of the Guernsey Growers' Association, and the chairman of the Worthing and District Market Growers' Association. The secretary, Mrs. E. ATKINSON, stated that promises of support had been received from more than 100 of the principal agriculturists and horticulturists in the Southern Counties and the Channel Islands. The chairman, Sir JOHN COCKBURN, pointed to the many advantages which would accrue to the trade in general, and more particularly to cultivators of this country, from the adoption of a protective tariff. He was convinced that enormous benefits would accrue to growers of fruits and flowers if a tariff were put on foreign produce. He quoted a letter from Mr. E. HICKS, who drew attention to the laws of other countries, which demand a certificate declaring all imported plants to be free from disease, whilst this country receives large numbers of plants full of disease. In the course of an eloquent speech Sir JOHN COCKBURN stated that of all industries worthy of preservation those of the soil were the most worthy, and that everything possible should be done to improve the conditions of the workers. He was greatly impressed by the enormous imports from the Continent to England, but the competition was grossly unfair. The railway companies also, said Sir JOHN, favour the foreigner by granting cheaper freightage; so much so that it has been found to be an economy for an English grower to first export his produce and then import it, thus effecting a saving. The meeting adopted the policy of co-operation with other societies in an endeavour to obtain recognition and assistance from the Government.

NURSERY EMPLOYES' EXCURSION.—The annual excursion of the employés of Messrs. SUTTON AND SONS, Reading, took place on Friday, the 20th inst., when a visit was made to Bournemouth. The party numbered nearly 1,000, and included principals of the firm. Trips by steamer were arranged from Bournemouth to and from Swanage, and a most enjoyable day was spent. The firm not only provided the two special trains and the steamer, but also granted each employé a sum of money to defray the day's expenses.

CARNARVONSHIRE FARM SCHOOL.—The new Madryn Castle Farm School was formally opened by the Right Hon. W. RUNCIMAN, President of the Board of Agriculture, on Saturday, the 21st inst. The castle originally belonged to a well-known Welsh family, and has, with the estate of 2,300 acres, been recently purchased by the Carnarvonshire County Council to be divided into small holdings. The castle has been converted into a residential college for instruction in rural economy and domestic science. The staff in residence are: Principal: Mr. R. H. EVANS, B.Sc., late of Reading University College; Mr. A. TURNER, late of the Agricultural Institute, Chelmsford; and Miss R. M. EVANS, late of Aberystwyth University. Visiting lecturers have also been engaged for special subjects. The garden will be used for the teaching of vegetable and fruit culture to young gardeners, farmers, and school teachers. Farming will be practised on 120 acres set aside for the school use. Mr. RUNCIMAN said that the object of the Board of Agriculture in providing for farm schools was to give practical instruction and advice to farmers. He recommended his audience to take the full advantage offered them, and suggested that they should endeavour to get their produce in the best market by growing high quality produce, and by means of co-operation to get the best prices.

REGENT'S PARK.—The areas leased to private persons and societies, forming part of the Crown lands of Regent's Park, have been the subject of several questions in Parliament lately. Mr. RUNCIMAN stated that the revenue from such sources amounted to £3,623 19s. 6d., whilst the expense of maintaining the part open to the public for 1912-13 was £15,163. There is a feeling that, wherever possible, additions should be made to the public space, and that existing leases to private holders should not be renewed. It was pointed out by a speaker in Parliament that the programme of the Royal Botanic Society for the months of May and June contained four dog shows, followed by dinners, and two fêtes, but only two events that could be possibly described as of a botanic or scientific nature. Mr. RUNCIMAN, in reply, said that nothing in the Society's programme goes outside the engagements they have entered into or is contrary to the covenants they have made. Answering further questions as to on whose initiative various leases in Regent's Park have been renewed or brought up for renewal before the old leases expired; with what persons negotiations are pending for the renewal of old leases; and on what grounds the renewal of these leases is regarded as imperative before July 1, or as in any other way necessary before the lapse of the existing leases, Mr. RUNCIMAN replied: "The leases have been renewed or brought up for renewal on the initiative of the persons who were in occupation, and desired to have a continued occupation, of the premises. Negotiations are pending with Mrs. R. N. SALOMON, who occupies St. Katharine's Lodge, and the Marquess of BUTE in respect of St. John's Lodge, and it will be in the interest of the land revenues that the leases should be renewed before the lapse of the existing leases."

HOLLAND HOUSE SHOW.—The summer exhibition of the Royal Horticultural Society, which will be held on Tuesday, Wednesday, and Thursday, July 1, 2, and 3, in the grounds attached to Holland House, Kensington, promises to equal in importance any of the former shows held in this beautiful London park belonging to Mary Countess of ILCHESTER. It will be remembered that last year was the first occasion on which the show remained open for three days, and although the exhibition was a magnificent one the receipts at the gates were small, owing to unfavourable weather. It is unfortunate that this season the dates clash with those of the Agricultural Society's Exhibition at Bristol, which may have some effect on the attendance. There will be the usual display of horticultural sundries, besides the exhibits of flowers. Opportunity will be afforded visitors to inspect Countess ILCHESTER'S private flower garden on payment of a small fee in aid of the funds of the West London Hospital.

HENRY CANNELL, V.M.H.—It will be learned with regret by horticulturists in general and lovers of florists' flowers in particular that this veteran florist has fallen on evil days and is in need of financial help. Mr. HENRY CANNELL'S name will long be associated with certain flowers, including the Chrysanthemum, Dahlia, and Pelargonium. He was one of the first to specialise in the Chrysanthemum, and, as a pioneer in the cultivation of this beautiful Chinese flower, did much to make it popular in gardens. He introduced the first Cactus Dahlia to this country, and has lived to see this type of the flower become the most popular of its race. His work amongst Pelargoniums, Cannas, Fuchsias, Violets, and Cacti, to mention only few subjects, is well known to our readers. I 1902 the Royal Horticultural Society recognised his work by conferring on him the highest distinction in the horticultural world—the awa of the Victorian Medal of Honour. Both Mr. and Mrs. CANNELL are eighty years of age, and Mrs. CANNELL has been confined to her bed for the past three years. So sad are their circumstances that they are both in receipt of an old-age pension, which, at present, is all they have to depend upon. Mr. CANNELL will probably be an applicant for the pension of the Gardeners' Royal Benevolent Institution, but the election will not take place until January next, and in the meantime help is needed urgently. Sir HARRY VEITCH will be pleased to receive contributions for the purpose of rendering immediate help, and we are sure that this appeal will meet with a warm response.

AMARYLLIS BELLADONNA BLANDA.

THE Belladonna Lily is one of the finest of autumn-flowering plants, but one that is not suitable for every position in the garden. It succeeds best in the colder districts when planted close to the base of a south wall, preferably that of a hothouse, where a certain amount of warmth percolates through the wall. In the south-western counties, however, the bulbs grow and flower admirably in the open ground without any wall in proximity. A narrow border in front of a wall, which can be exclusively given up to Belladonna Lilies, is, without doubt, the most appropriate site for them, since the long, strap-shaped leaves, which are thrown up towards the end of October and in November, after the flowers have withered are retained through the spring and early summer, and are apt to smother any low-growing plants in their immediate vicinity. Belladonna Lilies appreciate rich food, and a border full 2 ft. in depth should be prepared for them, and the lower 4 inches filled with old hot-bed manure. This should be covered with soil, with which it is a good plan to mix some bone dust. A good depth for the bulbs is 6 inches below the ground level, though in warm localities they succeed if placed only just beneath the surface. Fibrous loam and leaf-mould, mixed with sufficient grit or coarse sand to render the compost porous, suit them to perfection. There are many varieties of Amaryllis Belladonna. The well-known type grows to a height generally of some 2 ft., and bears about a dozen flowers, white in the centre and suffused with bright rose toward the extremity of the petals. The flower-stems are dark chocolate. The variety known as blanda, sometimes called Amaryllis blanda, is far superior to the type, the stems generally reaching a height of about 3 ft. and often bearing as many as eighteen flowers. These are flesh-coloured, the petals are more recurved, giving the flowers somewhat the contour of a bloom of Lilium longiflorum, though with a shorter tube, and they are more sweetly scented than those of the type. The flower-stems are green. Many years ago I brought a bulb of this variety home from the Cape of Good Hope, and have now over five dozen flowering bulbs. Later I received from the Cape about a hundred bulblets, which proved to be intermediate between blanda and the type. The variety Rosea perfecta is a form in which the flower-stem is about 3 ft. in height, while the shape of the flowers approaches nearer to blanda than to the type. The petals to the very base of the flower are of a deep rose-colour, and it is an extremely handsome form, but the Kew variety is certainly the finest at present known. It was at one time supposed to be a hybrid between the type and Brunsvigia Josephinæ, but this is doubtful.

flower-stems are fully 3 ft. in height and much thicker than those of the type, while the blossoms are larger, of a rose-crimson colour, and are borne in umbels of from twenty to thirty, while they have the additional recommendation of opening almost simultaneously, so that a fine flower-head produces a splendid effect. The leaves of this variety are quite double the width of those of the type. *Wyndham Fitzherbert.*

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

Curious Behaviour of an Elm.—I wrote you last year with regard to a Silver Elm tree reverting to the ordinary green type. You may be interested to know that this year the tree is practically a perfect specimen of a Silver Elm, which is now at its best and is a beautiful sight. *S. Green, Bromfort House Gardens, Devizes.*

Birds in Fruit Nets.—Will you again this season allow me to suggest to the bird-lovers among your readers that, during the summer season, they should make a point of periodically visiting their fruit-nets, and so ensure against such of our little songsters, which may have been caught there, dying a slow death by hunger and thirst? *Countrywoman.*

Laburnum with Three Kinds of Flowers.—I noticed a curious Laburnum tree in a garden near here the other day. There are three distinct colours of flowers on the one tree. I have occasionally come across the variety Adamii with two, but this one would appear to be a different variety, as the original colour is a rosy-pink colour, with one of the branches showing a cluster of pale lilac flowers, while on another branch is a cluster of deep yellow. The tree is about 13 feet high and about 12 years old. The gardener informed me that it [illegible] three different colours four years ago, and this is the first year it has developed blooms of three colours. *John G. Davidson, Strathallan Castle Gardens, Machany, Perthshire.* [Cytisus Adamii produces three distinct types of flowers. For a full description of this remarkable graft-hybrid see *Gardeners' Chronicle*, September 24, 1904, p. 217, figs. 84-88.—Eds.]

Puccinia malvacearum.—Mr. Massee, in his book, *Diseases of Cultivated Plants*, on p. 310, states: "I have proved by repeated experiments that if plants of the first year are attacked they remain free from the disease in spite of attempted infection. On the other hand, if seedlings escape the disease the first year, they are very susceptible the second year. This suggests similia similibus curantur, or, as in other instances, one attack implies immunity in the future." I have been unable to confirm this in the case of Puccinia malvacearum. I sowed Hollyhock seeds on March 21, 1912; the seedlings, 40 in number, were planted out on May 8, six weeks later. When they were fully established the leaves were infected (on June 20) with spores of Puccinia malvacearum obtained from diseased leaves of other plants. By the end of July all the plants showed evidence of the disease, and in October the plants were badly infected. The fungus has never totally disappeared during the winter, and is now on the young leaves for the second year. *Charles Wright, Kensington.*

Saxifraga longifolia.—On p. 390 it is stated that the R.H.S. Cultural Commendation was awarded for a plant of Saxifraga longifolia var. magnifica, shown by Sir Everard Hambro. It seems to me a pity that the committee should asquiesce in absurd names like "magnifica" tacked on to what is evidently ordinary longifolia. The measurements given are, length of spike 2 feet, 12 inches diameter rosette 12 inches. I have now flowering on my rockery here a plant with flower-spike measuring 28½ inches in length, the rosette 12 inches, and the diameter of spike 11 inches. The plant is ordinary longifolia. If such a term can be applied to this the queen of Saxifrages. *Archibald Buchan Hepburn, Smeaton-Hepburn, Prestonkirk, East Lothian, N.B.*

Davenham Gardens, Malvern.—Through the kindness of Mr. C. W. Dyson Perrins the gardens at Davenham were thrown open to the inspection of the public on Friday, June 20, for a small fee, in aid of the funds of the Gardeners' Royal Benevolent Institution, of which institution Mr. Perrins is a vice-president. The gardens were a blaze of colour; some of the chief beds were planted with Paul Crampel Pelargoniums, Stocks, masses of Anchusa italica Dropmore variety, Delphiniums, Irises, and Pæonies. A Rose garden with a pergola at one end is one of the features of the place; the paths are made with flagstones, and growing between them are choice Alpines. The Rose beds number over sixty, and each bed is planted with one variety of Rose. The glasshouses contain Souvenir de la Malmaison Carnations, Calceolaria, Clibranii, Clarkia elegans, Kalanchoe flammea, Begonias, Gloxinias and Schizanthuses. The fruithouses are well stocked with Grapes, Peaches, Nectarines, Figs, Tomatos, Melons and Bananas. *A Visitor.*



[Photograph by Wyndham Fitzherbert.]

Fig 183.—Amaryllis belladonna blanda; flowers pale pink.

See p. 440.

Blue Hortensias.—In respect to your interesting article on Blue Hortensias I may relate my experience. In one of the first gardens in which I was employed in Yorkshire I had care of a batch of these plants, and was instructed by the head gardener to use sulphate of ammonia freely when watering them. This I did, and I think without exception all the flowers came quite blue. The soil was of a peaty nature. At the present time I have a batch of Hydrangeas in flower, some of which are quite blue and others showing pink. Two years ago there was not a semblance of blue in any of my flowers. The plants have only been supplied with sulphate of ammonia, with occasional dressings of Peruvian guano. The [illegible] lime. The plants were potted in loam mixed with a little leaf-mould. *Thomas Bowser, Ashleigh Gardens, Uppsala [illegible]*

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

JUNE 17, 1913.—*Present:* Mr. G. Massee, V.M.H. (in the chair); Dr. Voelcker, Messrs. J. Odell, A. Worsley, G. Gordon, R. Hooper Pearson, W. Hales, J. T. Bennett-Poe, W. Fawcett, J. Fraser, E. M. Holmes and F. J. Chittenden (hon. sec.).

Colours in Pelargoniums. — Mr. FRASER showed specimens of, and offered remarks upon the manner in which the bright colours of show Pelargoniums had developed from what was at first a dull-coloured flower with colours spreading merely along the veins in a double feathered line. This later became intensified, forming two spots of deep colour at the tips of the veins. Later still the colour spread from the spots until the whole of the two upper petals became suffused with the same colour, though of probably lighter intensity, and finally the same colour spread to other parts of the flower.

Blue Oak.—Dr. A. VOELCKER showed sections cut across the branches of the oak from which the piece of greenish-grey wood shown by him last year was taken. The oak is at Tewkesbury and has been struck by lightning, but it is improbable that this has had anything to do with the coloration of the wood. The dead branch had more of the colour developed than the living, but the latter showed it to a considerable extent, though in no part was it so intense as in the dead. The heart-wood was not coloured. The appearance was extremely like that described by Von Schrenk in *Bulletin* 36 of the Bureau of Plant Industry, Dept. of Agriculture, U.S. America, under the title of Bluing of Timber, and attributed to the presence of a fungus.

Foxglove branched.—Mr. E. M. HOLMES showed a spike of Foxglove bifurcated about a third of the way up and showing little if any sign of fasciation in the lower part. Other members referred to similar instances.

Sawfly on Apple.—Mr. E. M. HOLMES also showed some sawfly larvæ which he had found feeding on the foliage of the Apple. The larvæ belong to Lygæonematus mœstus, which Professor Theobald has only recently recorded as British.

Rose with green petals.—Mr. CHITTENDEN showed the flower of Rosa canina with green petals. It had been plucked in a hedge not far from Leatherhead by Mr. Pleese, of Merrow, who had brought it to him.

Viola with fringed foliage.—Mr. DRUERY sent the plant, of which a leaf had been shown at the last meeting, of a Viola with frilled and fringed foliage. It was found in his garden at Acton, and was evidently not V. odorata as was at first thought. The species could not be determined from the specimen before the Committee, but was perhaps V. Riviniana.

Pelargonium hybrids.—Mr. A. LANGLEY SMITH showed a series of Pelargoniums raised by himself. The first cross was not defined. From it were raised numerous seedlings, varying much in foliage and in habit and colouring of flowers. These were the result of self-pollinating the hybrid. The third set were the result of fertilising the seedlings so obtained with pollen from the original hybrid. These again showed much variation in foliage, etc.

Gooseberries diseased.—Several specimens of Gooseberry branches were sent. They had died suddenly after starting into growth. This trouble with Gooseberries is usually due to the attack of the fungus Botryosphæria ribesii. It is best to remove and burn the affected branches as soon as they are discovered, not allowing them to remain until the autumn. The branches should be cut away close to their origin, as the fungus fruits near to the base of the affected shoots.

Saxifrage rust.—Foliage of several of the longifolia group of Saxifrages was sent from Hindhead badly attacked by a rust fungus. This fungus is a native of Switzerland, and has previously been recorded as attacking species of this section of Saxifraga in this country (see *Journal of Botany*, 1908, p. 153). Puccinia Pazschkei differs from P. Saxifragæ in having the teleutospores warted instead of striate, and it does not appear to attack the British species of Saxifrage.

HORTICULTURAL CLUB.

TRANSVERSE TRAVELLING HOTHOUSES.

(Continued from page 428.)

Now let us add up the returns taken and expected on the eighteen crops raised during the year on the five traverses :—

	£	s.	d.
Cabbage Lettuce	10	0	0
Spinach	8	0	0
Cauliflower (2 crops)	50	0	0
Parsley	5	0	0
Langtry (White Narcissus)	35	0	0
Another crop Spinach	8	0	0
Winter Cos (failure)	4	0	0
Radishes with them	8	0	0
One crop French Beans, and one crop Tomatos	40	0	0
Ditto, second traverse	25	0	0
Summer Radishes	12	0	0
Summer Cabbage Lettuce	20	0	0
Late French Beans	12	0	0
Autumn Lettuce (2 crops)	32	0	0
	£269	0	0

The house is 30 feet by 90 feet, and with the traverses and water supply costs about £250. It was expensively built. The traverses cover 1,500 yards, or just over a quarter of an acre. Hardly £10 worth of fuel has been used, about £15 per annum, and the part time of one man at £1 a week is the labour bill.

No. 2 Hothouse, 100 feet by 40 feet, with 11 traverses, was completed on March 1 of this year.

Although bulbs would pay best with Asparagus, we are, for the sake of experience, keeping this block of 11 traverses for other crops of the market-garden kind. We recognise that for winter work nothing can pay like Asparagus at present prices. Four thousand plants, producing four sticks each in three weeks or a month, would, at £1 per 100, produce something like £160 per traverse; so that for November, December and January we reserve three traverses for Asparagus and one for Mint, to be forced hard when the market wants it.

This leaves seven traverses to play with. One was put down to Double White Narcissus (small stuff) last November, and in forcing the Cos Lettuce, which was planted on the top, they gave us just a few flowers long before the outdoor came in.

On March 1 we sowed early Carrots, and also planted Cos and Cabbage Lettuce and Cauliflower. On March 26 the house was moved off, as the Lettuces ("Lobjoits") were drawing up too much. Now, June 2, the Carrots are being pulled; they are a fine crop, and ought to fetch £30. The summer Cos ("Lobjoits") all came off in early May, and the Cabbage Lettuce in late April. The Cauliflowers were really splendid stuff, and made 4s. a dozen, the Cabbage Lettuce 1s. 6d., the Cos 3s. to 4s. a dozen. These Lettuces and Cauliflowers together at, say, 3s. a dozen all round, came to £50. All were excellent, even winter Cos, and were marketed long before any were ready to tie up outside. In most seasons the lettuce would have made more, but, owing to "Stanstead Park" being so good this year the price was lower than usual. A very sharp frost was experienced on a Sunday morning, but, owing to the firm hold the crops had in the ground they did not suffer at all.

A Dutchman was here on the Saturday, and was admiring, "in March, our 'Yune,'" as he called it. He came over again on the Monday on purpose to see what damage the frost had done, and was so delighted to find that no injury had occurred that—a grower himself—he intends to introduce the system into Holland.

On March 26 we passed on to the Winter Cos and Double White Narcissus, but the rust was so bad in the Lettuce that we did not make very much of them, although what were good were *very* good. The double white Narcissi were only small stuff, as they were the leavings of the outdoor planting in October, and we had not then made sufficient progress with the traverses and hothouse to do more than prove that Double White will force in this way. The 80,000 that the traverse holds will be quite good next year and ought to produce at least £100. The Cos Lettuce should have made £30 instead of £10.

On April 17 the traverse rails were hard enough for the house to cover a sowing of early "Miland" Turnip; we usually sow outdoors on March 1 instead of April 17. After ten days they were in the rough leaf, and we passed the house on to French Beans and Tomatos.

On April 27 these two crops were covered, and occupied the house till May 10. The Beans were then breaking from the double leaf and the Tomatos were well established.

On May 10 we passed on to French Beans, spearing in the open ground, and planted Chrysanthemums and Summer Cos Lettuce. Now, June 2, they are far in advance of, and growing much faster than, the outdoor plants.

On March 24 we returned to the Turnips, and gave them strong heat (the first heat applied to any crop). In 48 hours they had passed the early outdoor sowing, and we started pulling on May 31.

May 30.—Back to the Carrots, which are now all fit for pulling (June 5).

June 5.—We now pass on to another traverse for Summer Cabbage Lettuce, to be followed by late French Beans in the autumn.

All the crops in this house and the other ten traverses are quite good, and when the Asparagus is another year old we shall, without difficulty, pay for the whole thing twice over in one year.

We propose using one house for bulbs almost entirely, and are on the way to construct it. This will have at least 16 traverses; November and December being a traverse each of Mint and Asparagus, to be followed by Golden Spur and successional bulbs until Spanish Iris is succeeded by a Tomato, Summer Lettuce, or Aster crop for the August and September months, with French Beans during October. A large Mint grower would, no doubt, have merely successions of Mint to follow one another, and after the Mint was worn out would work out a winter succession while the summer succession was replanted with Mint.

What can be done with Gypsophila, French Carnations, Pinks, and Carnations in summer, is better known to others than to us: but we feel sure that whatever is treated just before it naturally comes to maturity, is much improved in quality and value; for example, successions of Roses, protected afterwards with the "Follower" (a light-meshed, movable, wire construction on wheels).

To obtain early flowering the seed is sown in spring at the usual time, but is quickly raised by heat, thus preserving the plants against attacks of insects both above and below the soil. A very little seed is used, as all of it germinates; and if the weather is frosty, a day or two is in our uncertain climate all the delay necessary, because we have proved this fact, that young seedlings, if established and of a fair size, will stand the weather much better than if they were larger. Such crops as Strawberries, Violets, Kale, Mint, and bush fruits, which do much of their work in the preceding summer, are ideal for this kind of treatment.

It is, of course, unnecessary to go into the increased value of early produce, as it is well known that there is no exaggeration in saying that sometimes a fortnight will take a 6d. Lettuce down to sixpence per dozen, that French Beans drop in a fortnight from 9d. to 1d. This applies to every crop the gardener places on the market, in a greater or less degree. One crop of Hamburgh Grapes to follow another within twelve months is mere guesswork and opinion but there is this to be said about it, that no less than three of the best local early grape growers agree with me that the above is well worth trying. As to Gooseberries, early Peaches (with successional crops to follow), Figs to finish in the open—all are worthy of the ingenuity of the intelligent horticulturist. The marvellous strides that hardy crops make when started under heated glass, passed into the open and finished again under glass, must be seen to be believed.

That successional crops of tobacco treated in the same manner may be—owing to the superior mildness of the leaf and its freedom from the attacks of insects—a source of revenue to the horticulturist, is not beyond the range of

sibility, when one sees the price that even now is paid for the finest mild Havana cigars. That this is likely is shown by the fact that so far away as Java a German firm had made inquiries of us for a structure for the purpose.

We propose to cultivate commercially and educationally an exhibition farm of at least 30 acres, wherein all successions of cropping, all plants, fruit trees, flowering shrubs, etc., which have a commercial value can be dealt with in movable structures suited to the purpose. The farm would be the centre, and, as it were, the "brains," of a number of smaller establishments; to have a press of its own, circulating amongst the tenants of the organisation, who will be tenants of these exhibition farms all over the country. They will be visited by experts and coached by the press of the organisation. Eventually the future tenants will be trained by the exhibition farms which will be financially independent. It is proposed to utilise for the tenants building land which, when it becomes of sufficient value, will be sold, and the tenant provided for elsewhere. The glass erection will be easily removed, as it is built on the nut and bolt principle. The tenants' capital must be at least £200, and, owing to the profitable nature of the system employed, an excellent rent could be obtained. The liability of the company in the purchase of one such business of 1 acre in extent ought not to exceed £1,000, to be paid for in ten years. At the exhibition farm the greatest care would be taken to obtain thoroughly practical and efficient growers to train those that are in their charge. We believe that such a scheme is workable, and useful; that it will be a great financial success, and that the country will be the better for it. In conclusion, my one hope, far beyond the pecuniary benefit that must come to me from the universal use of my invention, is that the hard hit horticulturist of to-day in this country may see a brighter horizon. I trust that the "back to the land" cry may materialise, and that means may be found to supply transverse travelling structures in the same manner as engineers supply sets of haulage engines and trucks to small capitalists, which they themselves cannot purchase owing to lack of funds; and that an organisation of the kind suggested in this paper, collecting the practical experience and knowledge of hundreds of tenants into one centre, to be there distributed for the benefit of all, will produce that co-operation which up till now has been impossible. Thus it may be the means of resuscitating the industry of economic horticulture.

THE DISCUSSION.

Following the delivery of the lecture, Mr. Joseph Rochford offered some remarks upon the probable value of any system of movable glass structures, and stated that in so far as he himself was concerned he could not see at present that the value would be very much—at any rate for permanent indoor crops such as formed the greater part of his own cultures.

Mr. R. Hooper Pearson said that he had had the pleasure of a visit to Sompting recently, and he was particularly interested in what Mr. Pullen Burry had told them respecting the behaviour of the crops after the removal of the temporary houses. There were various kinds of stimulants, and the effect of stimulants upon a crop might very well have beneficial effects even after the discontinuance of the stimulant, this fact being well known in the case of animals. In Mr. Pullen-Burry's method of culture, the stimulant consisted of extra heat and moisture, and he had observed that in two or three days the crops were induced to make an extraordinary amount of growth, and, further, that a habit was set up which persisted in some degree after the crop was again exposed to outdoor conditions. There was every probability that Mr. Pullen-Burry's observations were correct, and if it could be established by repeated trials, properly attested, that the effect of temporary house-culture of outdoor crops were all that is claimed for them, then it seemed easy enough to realise that one movable house might have as much value as half a dozen permanent structures. Mr. Pearson also offered some remarks on the system of heating adopted by Mr. Pullen-Burry, in which the flow pipes were actually lower than the bottom of the boiler, yet the circulation was all that could be desired.

NATIONAL GLADIOLUS.

June 17.—The severe gale which raged over the Channel Islands and the Southern Counties of England was responsible for the paucity of exhibits at the exhibition of early flowering Gladiolus which was held by the Society in conjunction with the last fortnightly meeting of the R.H.S. On the day before the show the hon. secretary, Mrs. K. Atkinson, received letters cancelling 18 entries from Guernsey and five from Holland, besides several from the Southern Counties. The outstanding feature of the exhibits was the three vases of the Nanceanus variety, Queen of Whites, for which Mr. P. Hoogstraten, of Sassenheim, received an award of merit. Mr. Van Duersen, Sassenheim, sent an interesting collection of large-flowered Gladiolus, which included such desirable varieties as Niagara (pale buff and purple), America (lilac shades), Mrs. Francis King (scarlet), and Baron Jules Hulot (deep velvety purple; the buds appear to be almost black).

The only prize awarded was the first prize to Mr. R. Velthuys, Holland, for six varieties of early flowering Gladiolus. In this collection the varieties Ne plus ultra and General Scott were exceptionally good.

BIRMINGHAM BOTANICAL AND HORTICULTURAL.

June 11.—The annual Show of Orchids and early summer flowers, held at the Edgbaston Botanical Gardens on the above date, was a great success. Orchids in variety and of splendid quality were shown. Tree Carnations and hardy flowers were excellent. The weather was fine, and a good number of visitors inspected the rich display provided for them.

W. Waters Butler, Esq., Southfield, Edgbaston (gr. Mr. R. H. Jones), had the largest and most meritorious group of Orchids ever seen in the Birmingham district. It occupied an area of about 250 square feet, and contained numerous splendidly-grown species and hybrids, for which a Gold Medal and a Cultural Commendation were unanimously awarded. The collection, arranged against one side of the exhibition hall, created a charming effect, especially when viewed from the raised ground-floor at the south-east side of the hall. Miltonias were the outstanding feature of the exhibit, and the undermentioned varieties of M. vexillaria were particularly good: gigantea with large deep-coloured flowers, Southfield variety, to which an Award of Merit was given; bellissima (a splendid form), Empress Victoria Augusta, with unusually large richly-coloured blooms; magnifica, G. D. Owen, and a profusely-flowered specimen of M. Bleuana. Handsome plants of Thunia Winniana were freely employed at the upper part of the group and good specimens of Lælia purpurata, Southfield variety, L. p. Annie Louise and L. latona were displayed under a beautifully-flowered plant of Oncidium macranthum, which was trained to an iron girder under the glass roof which marked the centre of the group where a large Cymbidium was conspicuous. Lælio-Cattleyas were represented by handsome examples of Major-General Baden-Powell, Hippolyta, Dora magnifica, Canhamiana, Aphrodite (extra good), Fascinator Princess Maud with four very large substantial flowers; Hyeana (very fine), and eximia. Of Cattleyas, C. Mendelii White Lady with white petals and rich purple lip; C. Mossiæ Southfield var., C. M. Waterloo, C. Schilleriana Southfield var., C. Dusseldorfii Undine, and C. intermedia White Queen were of superior merit. Oncidiums were shown in great variety, and Maxillaria Sanderiana with four huge flowers. Calanthe veratrifolia, a profusely-flowered specimen of Bulbophyllum Godseffiana, Cypripedium Sanderæ, Odontoglossums and many others were included in this wonderful exhibit.

Messrs. Sander and Sons, St. Albans, sent an attractive group of Orchids, in which Lælio-Cattleyas and Odontoglossums predominated. Of the last-named O. excellens illustre (triumphans × nobile) occupied the centre of the group over a groundwork of Lælio-Cattleyas. Its long arching spike bearing twenty flowers was greatly admired. O. Wilckeanum, O. lævo (extra strong and very beautiful), O. crispum Regina with eleven large, shapely flowers and O. amabile were shown in excellent condition. Lælio-Cattleya Canhamiana intensa (L. purpurata × C. Mossiæ) with a very richly coloured lip, L.-C. c. Rex (a splendid form), L.-C. Mauretania Vulcan, L.-C. Wittiana, Oncidium Harrisonianum, Odontioda Cooksoniæ, Maxillaria Sanderiana, the beautiful Dendrobium Dearei, Masdevallias, Cymbidiums, Phalænopsis and Epidendrum prismatocarpum were displayed to advantage. The group was faced with such interesting plants as Oncidium, Unicorne, Eria amica, Promenæa citrina, Bulbophyllum saurocephalum and Saccolabium gemnatum. (Silver-Gilt Medal.)

From Messrs. James Cypher and Sons, Cheltenham, came an exhibit of showy and interesting Orchids, in which Odontoglossums, Lælio-Cattleyas, Miltonias, Epiphronitis Veitchii, Oncidium pulchellum, Platyclinis latifolia, Masdevallias, Odontiodas and Bulbophyllums were largely and well shown. Messrs. Cypher also sent beautiful plants of Ixora Pilgrimii, Hæmanthus Katherinæ and Statice intermedia. (Silver-Gilt Medal.)

Mr. E. V. Low, Vale Bridge, Haywards Heath, had a group of Orchids consisting principally of Cattleyas, Lælias and Lælio-Cattleyas. A few of the best things were Cattleya Mossiæ Wagneri var., C. Dusseldorfii Undine, Lælia purpurata with extra strong spikes of large flowers. Also Lælio-Cattleya Cowanii Low's var., L.-C. Bella, Odontioda Charlesworthii, O. Goodsonæ, Cypripedium Olivier and Lycaste Ballæ. (Silver Medal.)

Miscellaneous Exhibits.

Messrs. Young and Co., Hatherley, Cheltenham, filled the front of the orchestra with a pleasing arrangement of tree Carnations in large vases. Some of the best varieties were Cecilia Improved, Rose Enchantress, Mrs. C. W. Ward, Empire Day, Duchess of Devonshire, Mikado and Baroness Brienen. (Silver-Gilt Medal.)

Messrs. A. R. Brown, Ltd., King's Norton, exhibited a very fine bank of new and old varieties of tree Carnations in pots. The sturdy plants were profusely flowered, and the blooms were of good shape, size and substance. (Silver Medal.)

Messrs. Bakers, Wolverhampton, had an exhibit of Primulas, Oriental Poppies, Campanulas, Heucheras, Irises and Helianthemums. (Bronze Medal.)

Messrs. W. H. Simpson and Sons, Birmingham, had a delightful arrangement of Sweet Peas and Delphiniums in tall stands, together with flowers of three varieties of Antirrhinums—i.e., Fire King, Orange King and Black Prince—all really excellent and effectively displayed in the front of the group. (Silver Medal.)

Messrs. Gunn and Sons, Olton, Birmingham, showed a choice selection of Phloxes in pots. The new variety, Dr. Konieshofer, with dense trusses of bright orange scarlet flowers—larger and brighter than the well-known Coquelicot—was much admired. Messrs. Gunn also exhibited Oriental Poppies and miscellaneous Alpine plants. (Silver Medal.)

Miss S. Thompson, Handsworth, contributed an interesting collection of Cactaceous plants. (Bronze Medal.)

Robert Sydenham, Ltd., Birmingham, had an assortment of Spanish Irises, Gladioli and Ixias. (Silver Medal.)

Mr. John S. Bolton, Harborne, sent a collection of Violas.

Competitive Classes.

Of the eight entries in a class for Table Decorations, Mrs. Macdonald, of Harborne, won the first prize with an arrangement of Orchids; second, Mr. R. Bruce Waite, Harborne, whose combination of Viola cornuta purpurea, pink Carnations, and Spiræas and Rhodanthe relieved with Maidenhair Fern was very tasteful.

In a class for twelve varieties of Violas, Mr. H. Anderson, Shirley, and Mr. John S. Bolton, Harborne, were bracketed equal firsts. Each exhibitor showed flowers of surprisingly good quality. Mr. A. Bastock, Hall Green, had the winning exhibit of six vases of hardy herbaceous, purple, frilled lip.

AWARDS.

Awards of Merit.

Odontoglossum Pescatorei "*Southfield variety*," from W. Waters Butler, Esq., Edgbaston (gr. Mr. R. H. Jones). A very fine spike with twenty-four large white flowers prettily marked with yellow.

Cattleya Vulcan "Southfield variety" (*C. Mossiae* × *C. Schilleriana*), from W. WATERS BUTLER, Esq. Rich purple flowers with a broad rosy-purple, frilled lip.

Cattleya Mendelii "Southfield variety No. 1," from W. WATERS BUTLER, Esq., a beautiful flower with large broad petals and a very deep lip.

Miltonia vexillaria "Southfield variety," from W. WATERS BUTLER, Esq. This variety has unusually large thick petalled, white flowers shaded with purple.

Thunia magoniana superba, from Messrs. JAS. CYPHER AND SONS, Cheltenham. Large handsome flowers with stout light-coloured sepals and petals suffused with purple, deepening towards the margins. The purple lip is edged with white and marked with yellow in the throat.

Laelio-Cattleya Canhamiana magnifica, from Messrs. JAMES CYPHER AND SONS. The petals are pure white, and the lip deep purple.

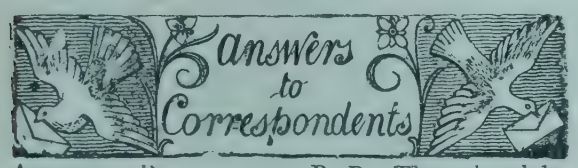
CULTURAL COMMENDATION.

To Mr. E. V. Low, Haywards Heath, for a well-flowered specimen of Cattleya Mossiæ Wagneri var.

Obituary.

GEORGE S. CASPELL.—We regret to record the death, on Monday, the 16th inst., of Mr. George Caspell, of Worth, Sandwich. Mr. Caspell, who was 76 years of age, was a well-known nurseryman and Rose grower. Unfortunately a prick from a thorn caused a painful malady, from which he suffered for several years, and to which he ultimately succumbed. He was for several years on the bench of aldermen of the ancient borough and Cinque Port of Sandwich.

THOMAS WILDE.—The *American Florist* records the death in Ottawa, at the age of 79, of Mr. Thomas Wilde, one of the pioneer fruit growers of that district, a life member of the Michigan State Horticultural Society, and a Charter Member of the Grand River Valley Horticultural Society. Mr. Wilde was a native of this country, but settled in America at the age of 14.



ABNORMAL POLYANTHUS : *R. B.* The calyx lobes of the flowers have developed into leaf-like structures. This abnormality is not uncommon among Polyanthus, Rose, etc. As pointed out by the late Dr. Masters, sepals under ordinary circumstances are so like leaves that it is not wonderful that they are often replaced by these organs. What, however, is the cause of this phyllody is unknown. It often happens that a sport of this kind comes true year after year. A phyllodic Primrose showing leaf-like calyx segments similar to those in the present specimen is illustrated in Fig. 131 of Masters' *Vegetable Teratology* (p. 248).

ACACIA WITH WHITE FLOWERS : *W. H. Bailey.* The specimen sent for examination is the ordinary False Acacia (Robinia Pseudacacia), and has probably originated as a sucker from the stock upon which the Rose Acacia (Robinia hispida) has been grafted. It is a common practice to graft the Rose Acacia upon both roots and stems of Robinia pseudacacia, and suckers are liable to appear from time to time. If the flowers developed on a branch which bore ordinary R. hispida flowers also, then it is a sport or perhaps a graft hybrid; but we are inclined to think that such is not the case, and that the white-flowered branch is simply a sucker.

ASPARAGUS : *C. T.* It is harmful to the plants to cut the shoots after this date; growers generally discontinue cutting Asparagus as soon as Peas are available. The growths must be allowed to develop to build up strong crowns for next season's crop.

ASTERS DISEASED : *H. and Sons.* The plants are injured by the "damping-off" fungus, which is favoured by an excess of moisture. Water with a solution of sulphate of potash and grow the plants in a well-ventilated situation.

CABBAGE ROOT MAGGOT (PHORBIA BRASSICÆ). *E. B. Dorset.* The Brassicæ are attacked by the cabbage root maggot, the larva of a fly Phorbia brassicæ. Benefit is derived by watering with the following specific:—One quart of soft soap in 1 gallon of boiling water; add to this 1 pint of crude carbolic acid and dilute with 30 times its bulk of water. Syringe the ground around the attacked plants.

CHRYSANTHEMUM LEAVES INJURED : *W. E.* The leaves are badly attacked by the Marguerite leaf miner, which has made numerous tunnellings under the surface. The yellowish grubs may be detected at certain spots, and should be destroyed by pinching with the thumb and finger nails or by piercing with a needle. Next season spray the leaves with quassia extract early in the spring to render them obnoxious to the fly which lays the eggs from which the grubs are hatched.

EMPLOYMENT IN KEW GARDENS : *J. E.* Application for admission as gardener in the Royal Botanic Gardens, Kew, must be made on a form furnished by the Director of the Gardens. Applicants must be unmarried, between the ages of 19 and 24, and must have been employed for not less than four years in good gardens or nurseries. They must be healthy, free from physical defects, and not below the average height. Applicants are informed when their names have been entered for admission, and on a vacancy occurring receive a notice to that effect. Should an applicant not be appointed within three months after the date of his application he should write again if he still desires admission. Those selected for appointment as gardeners who are British subjects, if they render approved service, are eligible to remain at Kew for a period of two years from the date of joining. At the termination of two years' experience in the Royal Botanic Gardens a gardener ceases to be employed at Kew unless he has in the meantime been selected for service as a sub-foreman for a further definite period of strictly limited duration. Gardeners whilst at Kew receive an allowance of 21s. per week to meet the cost of subsistence. Sub-foremen are paid 27s. per week.

FIG, BROWN TURKEY : *J. W., Hammonds.* The trouble is probably due to the disease, Cercospora Bolleana. Send us specimens of the fruits and any spotted leaves, if present, for examination.

GLOXINIAS : *Athy.* The injury is caused by thrips. Use an insecticide.

GRAPES DISEASED : *J. T., W. B., and S. H. J.* Grape "rot" is present, caused by Glœsporium ampelophagum. The only thing that can be done now is to remove the diseased berries. In the winter thoroughly drench every part of the vine with sulphate of iron—1lb. in 25 gallons of water. Give two dressings at intervals of a month before the buds commence to swell.

INSECTS ATTACKING THE ROOTS OF BEGONIAS : *G. D.* The white worms (Enchytræidæ) found in the soil of your Begonia pots are harmful to the roots of many plants. Watering with Clubicide is said to kill them.

NAMES OF PLANTS : *J. H. Bingham.* Rose White Lady, H. T.—*C. F. M.* Colutea arborescens.—*Head.* 1, Vitis Coignetiæ; 2, Hydrangea petiolaris; 3, Cotoneaster microphylla; 4, Akebia quinata; 5, Spiræa japonica; 6, Spiræa discolor.—*F. G. P.* Alonsoa incisifolia. — *Quarterian.* 1, Myosotis alpestris var.; 2, Pæonia anomala; 3, too scrappy to identify; 4, Syringa vulgaris alba grandiflora; 5, cannot identify without flowers; 6, Saxifraga hypnoides; 7, Saxifraga Aizoon; 8, Sambucus nigra; 9, Hesperis matronalis; 10, Thalictrum flavum; 11, Mimulus luteus var. cupreus.—*H. F. M. B.* Carex vulpina.—*A. G. Sainsbury.* Perèzia multiflora.—*E. B.* 1, Habenaria conopsea; 2, Phlomis fruticosa; 3, Orchis maculata.—*A. C. H.* 1, Phlomis fruticosa; 2, Gillenia trifoliata; 3, Rhus Cotinus (Whig tree).—*M. G. C.* Buddleia globosa.—*A. J. G.* 1, Hibiscus Cooperi; 2, Crassula coccinea; 3, Acalypha hispida; 4, Clerodendron fallax; 5, Acalypha musaica.—*H. S.* Probably Begonia Worthiana; next time send better specimens.—*J. W.* Probably Silene pendula var. flore pleno.—*H. R. Holland.* 1, Thuya plicata (T. gigantea); 2, Populus trichocarpa.—*C. Taylor.* 1, Spiræa Filipendula; 2, Cephalaria alpina; 3, Thalictrum minus var.; 4, Populus albus.—*O. R. C.* 1, Sophronitis cernua; 2, Polystachya Ottoniana; 3, Angræcum modestum; 4, Oncidium flexuosum.—*Jackson.* 1, Spiræa ariæfolia; 2, Ceanothus americanus; 3, A garden form of Veronica Andersonii; 4, Send when in flower; 5, Spiræa Lindleyana; 6, Funkia Sieboldiana.—*W. S.* Cotoneaster frigida, Cratægus dippeliana, Spiræa brachybotrys var. Why not number your specimens?

PEA GLORY OF DEVON : *C. F. C.* All cultivated varieties of culinary Peas are liable to throw degenerate plants, no matter how carefully the stock is selected. You do not state what number of your plants proved rogues; if all the batch was similar to those you send it is probable that the variety is not Glory of Devon.

PINE SHOOT MOTH (RETINIA BUOLIANA). *S. A. Peto.* The shoots are attacked by the pine moth (Retinia buoliana). The moth appears towards the end of July and lays her ova on tips of the shoots. Larvæ occur in late summer, and gnaw the sides of buds, causing resin to flow. They winter in the masses of resin, and in spring come out and attack the leading bud as a rule, and feed until end of June. They pupate in the shoots, and the moths emerge in 10-14 days. All that can be done now is to hand-pick the attacked shoots.

PLANTS DISEASED : *W. J. W.* Eelworm is present. The soil should be treated with gas lime and allowed to remain fallow for a period of about six weeks.

PROLIFEROUS ROSE : *W. Cristobel.* The abnormal Rose exhibits what is known as proliferation—that is, the centre of the flower, instead of remaining arrested in its growth, has started to lengthen into a branch. Proliferous Roses are very common, and have been illustrated on many occasions in these columns.

SPLIT PEACH STONE : *I. H.* It is not unusual to find a split stone in a Peach or Nectarine. This may be the result of the particular fruit receiving a check during the process of stoning, or probably the malformation was caused by an insect entering the flower-stem during the fruit-setting period, thereby interfering with the proper formation of the stone. Give the trees a dressing of some calcareous substance, such as old mortar rubble, as stone fruits are always benefited by lime.

TRAINING YEWS : *Cardiff.* As you evidently realise, the chief difficulty in growing Yew trees with a ball-shaped head lies in getting a good base to the ball. The Yew being naturally of an ascending habit, the formation of the top half of the "ball" becomes a comparatively easy matter. To obtain the desired shape you could either have round wire frames made, fixing them at the desired height and training the future growths around and outside the frame, or you may fix a flat circular wire with cross-ties to the stem about 6 inches below the future base of the "ball" and carefully tie some shoots down towards it, pinching out the leading points when they are a couple of inches within the desired length; by the time the head is furnished the growths will have extended to the required distance from the centre. The complete furnishing of the head is then a matter of patience, tying in and pinching the shoots. If the five or six shoots which have formed at the tops of your Yews are not too stiff to be bent it would be well to leave them, in which case the base of the lowest shoot would be approximately the centre of the head, otherwise only the best shoot should be retained. If the first method is adopted the wire frame must, of course, remain; with the latter method the wire must be allowed to remain until the lower stems have become rigid, when it should be removed.

Communications Received.—H. H.—A. E. T. R.—R. R. G.—F. E. G.—F. E. P., York—G. J. and Son—Delta—C. R.